Massachusetts Births 2011 and 2012

Massachusetts Department of Public Health
Office of Data Management and Outcomes Assessment

August, 2014

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Introduction

This report presents detailed data on the number and characteristics of Massachusetts births in 2011 and 2012 including maternal behaviors and health characteristics, medical services utilization by pregnant mothers, and infant health characteristics. These statistics are based on data obtained from the Massachusetts Standard Certificate of Live Birth and the accompanying confidential health and demographic data for each birth record.

Birth certificate data are essential for surveillance, research, programs such as the Universal Newborn Hearing Screening and the Birth Defects Monitoring program, and high-risk infant identification. In addition, birth certificate data are used for the Maternal and Child Health (MCH) five-year needs assessment and evaluation process to prioritize interventions and services to improve birth outcomes and health, and for public health research datasets such as the Pregnancy to Early Life Longitudinal (PELL) database and the Pregnancy Risk Assessment Monitoring System (PRAMS). The Registry of Vital Records and Statistics and the Massachusetts birthing facilities play a critical role in the collection of birth information for civil registration purposes and provide data to programs for decision-making, which guides many public health initiatives.

Methods

Data on births are based on information from the Massachusetts Standard Certificate of Live Birth filed with the Registry of Vital Records and Statistics. The 2003 revision of the Standard Certificate of Live Birth allows the reporting of more than one race (multiple races) for each parent in accordance with the revised standards issued by the Office of Management and Budget (OMB) in 1997.

In order to provide uniformity and comparability of the data during the transition period, before multiple-race data are available for all reporting areas, it is necessary to “bridge” the responses of those who reported more than one race to a single-race. The method used to bridge responses for those who report more than one race to a single race is based on a procedure whereby multiple races are assigned to the smallest minority group first (i.e. Asian and White becomes Asian or Black and Native American becomes Native American). All multiple races that include Hispanic will be assigned as Hispanic and this group also includes all respondents who reported Hispanic ethnicities as well.

Vital statistics birth data may be presented in terms of either maternal residence or place of birth. Resident data include all events that occur to residents of the Commonwealth, regardless of where they happen. In Massachusetts, a resident is a person with a permanent address in one of the 351 cities or towns. Occurrence data include all events that occur within the state, whether to residents or nonresidents. All data in this publication are for Massachusetts residents unless otherwise stated. There is an agreement among the 50 states, District of Columbia, Puerto Rico, Virgin Islands, Guam, and Canadian provinces that allows for the exchange of statistical copies of birth and death records for events occurring in a state other than the state of residence.

Note to Readers

1. **Special Topics**
   Beginning with the 2011/2012 Birth Report, there is a new "Special Topics" section. This section focuses in-depth on a few selected topics of interest by bringing together from a variety of sources in order to put some of the data contained in the tables into context and to show how the data link to programmatic efforts going on throughout the department. We hope that you find this new approach helpful.

2. **VIP System**
   Launched in the beginning of 2011, the Vital Information Partnership (V.I.P.) is designed to streamline and integrate all vital event registration, securely, across the Commonwealth.

3. **2003 Revisions of the U.S. Certificate of Live Birth**
   This report includes 2011 data on items that are collected on both the 1989 revision of the Standard Certificate of Live Birth (unrevised) and the 2003 revision of the Standard Certificate of Live Birth (revised). In addition to the collection of new variables, the 2003 revision of the Standard Certificate of Live Birth allows the reporting of more than one race (multiple races) for each parent in accordance with the revised standards issued by the Office of Management and Budget (OMB) in 1997. See "Technical Notes" for detailed information on the 2011 multiple-race reporting area and methods used to bridge responses for those who report more than one race to a single race. This new revision also includes new variables such as: pre-pregnancy weight and height, receipt of food from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) during pregnancy, pregnancy resulting from infertility treatment, and dental care during pregnancy. There is also more detailed information on smoking before and during pregnancy and on whether trial of labor was attempted prior to cesarean delivery.

4. **Population**
   We have used two population files based upon the 2010 Census for denominators in rate calculations:
   - The Massachusetts Department of Public Health Race Allocated Census 2010 Estimates file, which contains population estimates based upon the Census 2010 Summary File 1, was used to calculate city, town, and other substate rates. In this file, the Census 2010 race categories, "Two or more races" and "Some other race" are redistributed to the MDPH standard race categories: Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian and Pacific Islander, and Non-Hispanic American Indian and Alaska Native. All persons in the Census 2010 Hispanic ethnicity category are counted as "Hispanic" race in the MDPH estimates. This kind of file is often referred to as a "bridged" file, that is, one that bridges the new race and ethnicity collections to the conventionally used categories. These population estimates are available from the MassCHIP Instant Topic "Census 2010, 2000 Socio-Demographic Trends" (http://masschip.state.ma.us). **Please note**: If the population in your community increased from 2010 to 2012, the rates listed may **overestimate** the actual rate. If the population in your community declined from 2010 to 2012, the rates given in the publication may **underestimate** the actual rate. As soon as new population data are available for cities and towns, revised rates will be available by contacting MassCHIP (http://masschip.state.ma.us). Please see the Appendix for detailed information about population.

- The 2012 Modified Age, Race/Ethnicity, and Sex file (MARS), which is another bridged population file produced by the National Center for Health Statistics (NCHS) and the Census Bureau Population Estimates Program was used to calculate state rates by race and Hispanic ethnicity, e.g., teen birth rates. This file has data by single years of age, sex, race and Hispanic ethnicity in the five mutually exclusive categories used by the Department: White Non-Hispanic, Black Non-Hispanic, Asian Non-Hispanic, American Indian/Alaska Native Non-Hispanic, and Hispanic.

5. Infant Mortality

The infant mortality statistics in this report are based upon the preliminary 2011 and 2012 Massachusetts death files by the Massachusetts Registry of Vital Records and Statistics. Infant mortality statistics released in the future may differ from those in this report.

6. Rate, Proportion, and Number Comparisons

The comparison of rates, proportions, and numbers is based on tests of statistical significance. Comparative words, for example, "higher", "lower", "increase", and "decrease" are used only when the statistics being compared are statistically different (i.e., statistically significant at the $P \leq .05$ level). Please see the Technical Notes for a discussion of how statistical significance is determined. All statistics presented, unless stated otherwise, are based upon the number of births and not on the number of mothers. Proportions are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

7. Resident Births

All data in this publication are resident data unless otherwise stated. Resident data include all events that occur to residents of the Commonwealth, wherever they occur.

8. Race and Ethnicity

In the text, the race categories, White, Black, American Indian, Asian, and Hispanic are mutually exclusive. For example, when we refer to White mothers, this means White non-Hispanic mothers. See "Technical Notes" for detailed information on the multiple-race reporting area and methods used to bridge responses for those who report more than one race to a single race. Please note that trend data on minority groups such as Native Americans, Hispanics, Blacks, and Asians may not be comparable as these groups will show increases in the number of births solely related to the methods used for re-classification of multiple races into single race categories. **Please use caution in interpreting these numbers.**

9. Adjusted Adequacy of Prenatal Care Utilization Index (APCUI)

In 2011 and 2012, there were reporting issues for the number of prenatal visits in 4 hospitals: MetroWest Medical Center, Newton Wellesley Hospital, Saint Vincent Hospital, and Winchester Hospital. Adjusted APCUI presents adequate prenatal care without these 4 hospitals since their data is considered to be unreliable.

Fast Stats

Birth Counts

- In 2011, the total number of births to Massachusetts resident women was 73,169, which was similar to the figure of 72,835 for 2010. The proportion of births to White mothers declined by 6% (from 66.5% in 2010 to 62.8% in 2011) and the proportion of births to Hispanic mothers increased by 20% (from 14.5% in 2010 to 17.5% in 2011)[1].
- In 2012, the total number of births to Massachusetts resident women was 72,457. The proportion of births to Asian mothers increased by 10% (from 8.2% in 2011 to 9.0% in 2012).

Teen Births

- In 2011, the teen birth rate reached a historic low in Massachusetts (15.4 births per 1,000 women ages 15-19) which represented a decline of 10% from the 2010 rate (17.1 births per 1,000 women ages 15-19). The teen birth rates for Whites declined by 15% from that of 2010 (10.4 births per 1,000 women ages 15-19 in 2010 to 8.8 births per 1,000 women ages 15-19 in 2011).
- In 2012, the teen birth rate reached a historic low in Massachusetts (14.0 births per 1,000 women ages 15-19), which represented a decline of 8.5% from the 2011 rate (15.4 births per 1,000 women ages 15-19). The teen birth rates for Whites declined by 14.7% from that of 2011 (8.8 births per 1,000 women ages 15-19 in 2011 to 7.5 births per 1,000 women ages 15-19 in 2011). There were no significant changes for Blacks, Hispanics, or Asians.

Infant Mortality

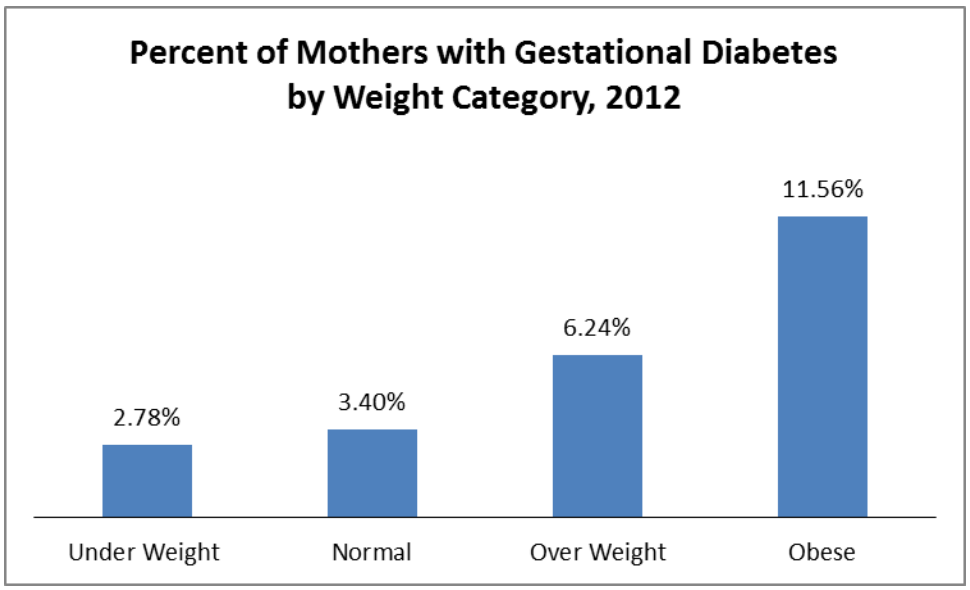
- Since 2010, the Infant Mortality Rate (IMR) has been statistically comparable for all race and ethnic groups (the Black IMR was not different from the White IMR).
- The 2012 IMR did not change significantly from 2011 (4.3 infant deaths per 1,000 live births vs. 4.2 in 2011).

[1] Please note that trend data on minority groups such as Native Americans, Hispanics, Blacks and Asians may not be comparable as these groups will show increases in the number of births solely related to the methods used for re-classification of multiple races. **Please use caution in interpreting these numbers.**

Special Topics

Topic 1: Gestational Diabetes Mellitus (GDM)

Based on data from the Pregnancy to Early Life Longitudinal (PELL) data system, the prevalence of GDM among unique deliveries was 5.1% in 2011. The prevalence of GDM among unique deliveries significantly increased between 2000 and 2011 from 2.7% to 5.1% with an Annual Percentage Change (APC) of 5.4%. This increase can largely be explained by the increasing rate of overweight and obesity among women of reproductive age in Massachusetts. According to the Behavioral Risk Factor Surveillance System, in 2011 an estimated 50.5% of adult women were overweight and 21.4% were obese. This compares to the 2000 estimates of 41.5% overweight and 15.5% obese. Maternal age, another risk factor for GDM, has also been increasing over time in Massachusetts.



Among the 56,943 unique deliveries for which pre-pregnancy BMI information was available for the mother in 2011, 3,020 had GDM. A Population Attributable Risk (PAR) analysis indicated that, 38.0% of these GDM cases were attributable to high BMI (BMI >=25); 25.4% were attributable to older maternal age; 13.6% were attributable to maternal race ethnicity, 4.0% were attributable to parity and 19% were attributable to other factors. In other words, if women had normal weight (BMI between 18.5-24.9) before pregnancy, we would expect 1,147 fewer cases of GDM; if women were 20-29 years of age, we would expect 767 fewer cases GDM; if all women were white, we would expect 410 fewer cases of GDM; if all deliveries were first time, we would expect 121 fewer cases if GDM; and if women only gave birth to singletons, we would expect 29 fewer cases of GDM.

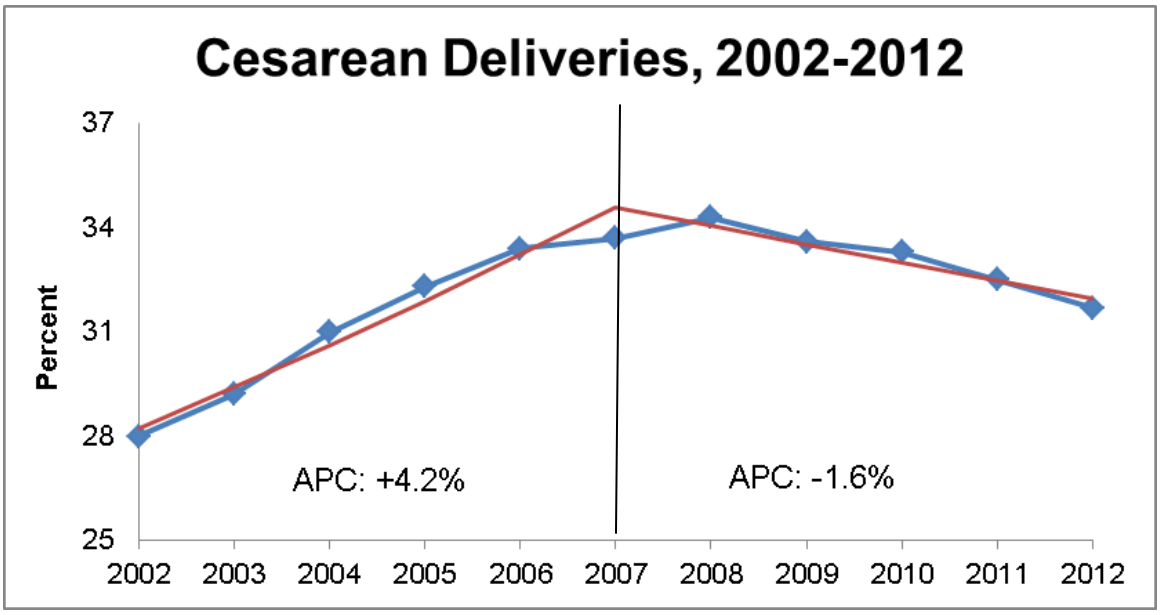
Recurrent GDM is a serious life course public health issue; the inter-pregnancy interval provides an important window for diabetes prevention. Women with gestational diabetes mellitus (GDM) may be able to reduce their risk of recurrent GDM and progression to type 2 diabetes mellitus through lifestyle change. MDPH in collaboration with colleagues from CDC and Mass General Hospital used PELL to examine a population of women delivering two sequential live singleton infants in Massachusetts (1998-2007) to estimate the prevalence of chronic diabetes mellitus (CDM) and GDM in parity one pregnancies, recurrence of GDM and progression from GDM to

CDM. A total of 134,670 women with two sequential deliveries of parities one and two were identified. Results indicate that nearly half of women with GDM in their parity one pregnancy developed GDM their subsequent pregnancy. The development of either type of diabetes (GDM or CDM) following a parity one pregnancy with no diagnosis of diabetes was < 3%. Women with recurrent GDM were disproportionately older and foreign born. A manuscript detailing these findings has been prepared and will be submitted to MDPH and CDC clearance.

Topic 2: Cesarean Sections

In 2011, for the first time in the last decade, the cesarean delivery rate declined significantly from the year before. There was a 3% overall decline, with a rate of 32.5% in 2011 vs. 33.3% in 2010. In 2011, White mothers experienced a decline of 4% in cesarean delivery from 2010 and Hispanic mothers saw a 9% increase. In 2012, there was a continued decline in the cesarean delivery rate, down by 2% from 2011 (31.7% vs. 32.5%). Asian and Hispanic mothers continued to have the lowest cesarean delivery rates (29.4% and 29.1%, respectively), while Black mothers continued to have the highest rates (34.1%). Hispanic mothers saw a 7% decline from 2011.

Over the past decade, the cesarean delivery rate increased by 4.0% per year from 2002 to 2007 and has been declining by 1.6% per year since 2007.



Based on data reported in the Massachusetts Births 2007 report, the percent of Massachusetts births that are cesarean deliveries increased 44% from 23.4% in 2000 to 33.7% in 2007. To address this issue, a Cesarean Section Analysis Working Group (CSAWG) was formed in FY08 to better understand factors contributing to the increasing cesarean delivery rate in MA and examine maternal and pregnancy risk factors associated with this increase, using linked data from the PELL data system. The CSAWG examined hospital–level characteristics associated with higher rates of cesarean deliveries, particularly in women with no documented medical or pregnancy risk factors and among all women, after adjusting for maternal characteristics and pregnancy risk factors. A presentation describing the results was delivered at the 2011 MCH EPI Conference. In addition, the Massachusetts Perinatal Quality Collaborative (MPQC) was

established in collaboration with March of Dimes, ACOG, and MDPH. The goal the MPQC is to improve the perinatal outcomes of Massachusetts mothers by quickly identifying and facilitating the adoption of proven, cost effective, and evidence-based practices at the state's maternal facilities. The MPQC initially investigated the variation in rates of cesarean delivery among Massachusetts hospitals, focusing on individual and facility characteristics and levels of pregnancy risk. MPQC convened a perinatal summit on May 16, 2011 to highlight the results of the analysis to get feedback from obstetrical providers across the state. The primary goals of the summit were to get hospitals to work with the MPQC on some quality measures to improve maternal and infant health and allow providers to have an intra-professional discussion.

Topic 3: Infertility

Infertility is defined as the inability to conceive or carry a pregnancy to term after 12 months of trying to conceive if you are 35 or younger or 6 months of trying if you are over age 35. Treatments for infertility include: Assisted Reproductive Technologies (ART), artificial insemination, and fertility drugs:

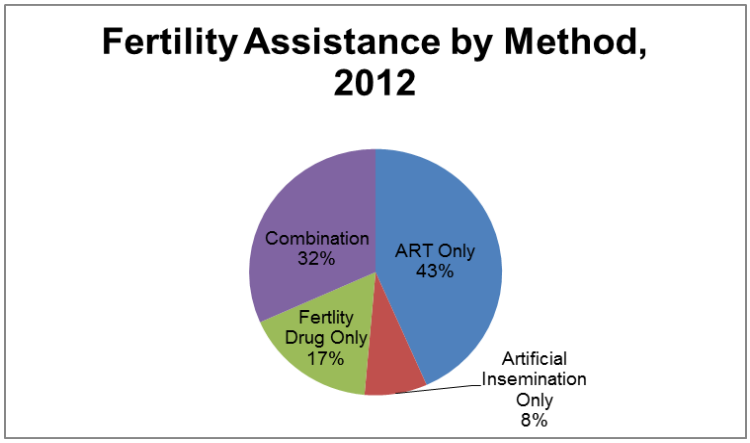
ART includes procedures where both eggs and sperm are handled in the lab (most commonly, in vitro fertilization [IVF]). Artificial Insemination includes procedures where sperm is inserted directly into a woman's cervix, fallopian tubes, or uterus (most commonly, intrauterine insemination [IUI]). Fertility drugs are medications that work by causing the release of hormones that either trigger or regulate ovulation.

The use of these treatments has steadily increased over the past few decades and in 1987, the Massachusetts State Legislature mandated that private health insurance policies provide coverage for the diagnosis and treatment of infertility, including in vitro fertilization. In 2010, Massachusetts ranked 15th in the nation in overall population, but 4th in number of ART procedures and 1st in the ratio of ART procedures performed per 1 million women of reproductive age. Because of the transfer of more than one embryo during IVF or the development of multiple eggs due to fertility drugs, women who undergo infertility treatment are more likely to give birth to multiples than those who conceive naturally. Multiple births are associated with greater health problems for mothers and infants, including higher rates of caesarean deliveries, prematurity, low birthweight, infant death, elevated risk of birth defects, and disability.

Since 1996, the Massachusetts Department of Public Health has collected information on the use of ART and fertility drugs. Historically, the use of these infertility treatments was recorded on the hospital worksheet of the birth certificate and both ART and artificial insemination were included in the definition of ART. In recent years, studies have shown extensive underreporting of ART by the birth facilities. While there is no other reporting of fertility drug use with which to compare the birth certificate, we suspect that their use is also under reported. With the launch of the Vitals Information Partnership (VIP) electronic birth registration module in 2011, MDPH now collects information on the use of infertility treatments both directly from the mother and from the birth facilities and also separates treatment methods so that artificial insemination is separated from ART.

In 2012, 3.9% of women (2,770) reported the use of ART, artificial insemination, and/or fertility drugs. These women gave birth to a total of 3,397 babies, representing 4.6% of all births. Almost 32% of these women reported using more than one of these methods, which the most common combinations being ART with fertility drugs (441), artificial insemination with fertility drugs (276) and ART with artificial insemination and fertility drugs (276). Ninety-five percent of women who used fertility treatments had their prenatal care paid for by private insurance, which

compares to 59% for women who did not use fertility treatments. Over half (52.5%) of women who used fertility treatments were 35 years of age or older, compared with less than one quarter (22.1%) of women who conceived naturally. Of women who used fertility treatment, 21.5% gave birth to multiples, where as 1.52% of women who did not use fertility treatment had a multiple birth delivery.

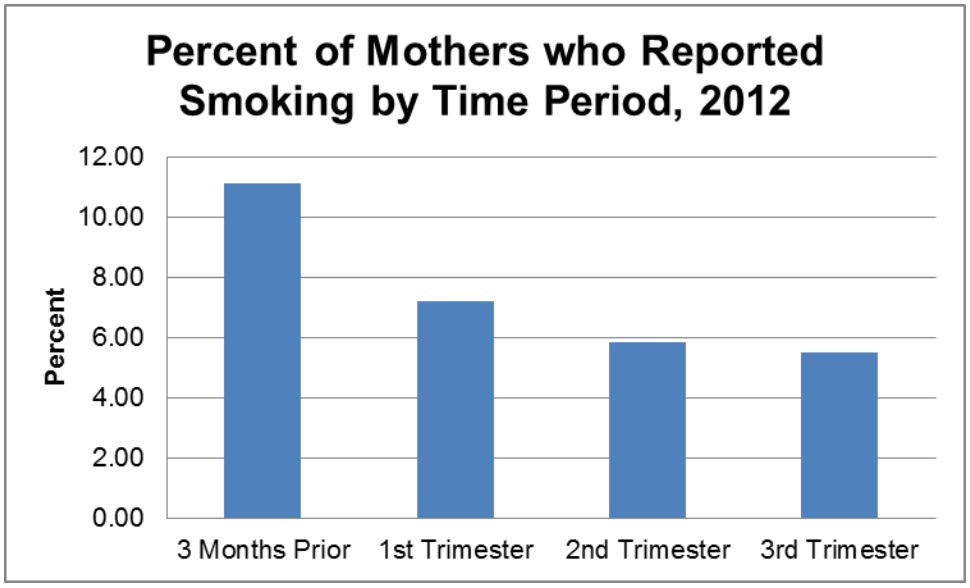


Topic 4: Smoking

Over the past two decades, the rate of smoking during pregnancy recorded on the birth certificate decreased from 19.3% in 1990 to 6.3% in 2010. Smoking during pregnancy is highest among people with low income, low educational attainment, and those on public health insurance. In Massachusetts, many social service programs that serve low socio-economic status (SES) populations provide screening, brief interventions, and referrals to quit smoking programs, including FRESH Start (which stands for Family Recovery Engagement Support of Hampden County), EIPP (Early Intervention Partnership Programs), and Women, Infants, and Children (WIC). For smokers with MassHealth insurance, medications and counseling to quit smoking is fully covered. The Massachusetts Smokers' Helpline offers free telephone counseling and resources for smokers to quit.

Recent research indicates that smoking during pregnancy is underreported especially in certain subgroup populations, mostly due to social stigma. Beginning in 2011, the birth certificate began asking three questions on the amount of cigarettes smoked during each trimester – instead of one question about smoking during the entire pregnancy. This change in wording encouraged respondents to be more thoughtful about how much cigarette smoking behavior occurred and may have resulted in better recall, and thus a higher rate of reported smoking. The latest data shows that White, non-Hispanic mothers smoked at a 15% higher rate than previously reported. And although the percentage of smoking during pregnancy is now higher, especially among White, non-Hispanic mothers, it is important to note that the one-year increase is more likely due to the change in methodology and the collection of more accurate information, rather than a true increase in smoking within the population.

The new data does allow us to look at the percent of mothers who reporting smoking within the three months before their pregnancy and for each trimester of pregnancy. While 11.14% of mothers reporting smoking within the three months prior to their pregnancy, only 7.19% reported smoking during the first trimester of pregnancy. This number continued to decrease through the third trimester, indicating that women quit smoking after they were aware of their pregnancy.



Topic 5: Oral Health

Improving oral health in the US has received increasing attention over the past decade and was included as one the Healthy People 2020 goals. While the oral health status of adults and children in the U.S. is continuing to be studied on a population basis and is getting local and national attention, research on the oral health status of pregnant women is still sparse. Pregnancy can alter or complicate oral health in women, which can lead to adverse pregnancy outcomes and potentially poor oral health in children. However, pregnancy offers a unique opportunity for women to receive preventive, diagnostic and restorative services, which have been found to be safe throughout pregnancy. Unfortunately, prenatal providers often do not provide oral health care to pregnant women or refer patients to oral health providers, and most women do not seek oral health care. In some cases, neither prenatal providers nor pregnant women understand that oral health is an essential component of a healthy pregnancy.
Birth certificate data collection on dental cleaning during pregnancy began with the launch of VIP. For mothers who had information available in 2011, fewer than half (45.1%) had their teeth cleaned by a dentist or dental hygienist during their pregnancies. In 2012, there was a 2% increase in this percentage and 46.1% of all mothers reported having their teeth cleaned during their pregnancies. This was driven by an increase of 8% among Asian mothers and 6% among Hispanic mothers. The percentage varied by race and Hispanic ethnicity, from 30.9% for Black mothers to 52.6% for White mothers.

The Pregnancy Risk Assessment Monitoring System (PRAMS) has also been collecting information about oral health before, during, and after pregnancy. The PRAMS team has been working with the Massachusetts Perinatal Quality Collaborative (MPQC) and Medicaid to encourage OB providers to normalize oral health care during pregnancy. In June 2013, the PRAMS team in collaboration with the MDPH Office of Oral Health and Medicaid held a state-wide oral health summit at the Massachusetts Medical Society. The primary objectives of the summit were to increase awareness about the importance of oral health to the general health of the mother and the infant and to start the process of developing state-wide guidelines for routine screening, referral, and treatment of pregnant women for oral conditions during pregnancy.

Following the statewide summit, the PRAMS team established an Oral Health Steering Committee to provide direction, input, guidance and resources, as well as engage with additional stakeholders as appropriate. The Steering Committee is a multidisciplinary group of individuals including pediatricians, obstetricians, dentists, Medicaid, and MDPH staff including PRAMS staff. The Steering Committee collaborated with the MDPH Office of Oral Health to apply for "Grants to States to Support Oral Health Workforce Activities." Funding was received in October 2013 and is being used to address some of the state's most pressing oral health workforce needs and to reduce disparities in access to oral health prevention and care. This funding will help target underserved urban and rural communities, low-income residents, migrant workers, homeless women and pregnant women who are low-income.

To further advance our oral health priority and improve oral health screenings during pregnancy, the PRAMS team in collaboration with multiple stakeholders is in the process of developing oral health care practice guidelines during pregnancy and early childhood for prenatal and pediatric providers as well as oral health professionals who care for pregnant women and children.

2011 TABLES AND FIGURES

Table 1. Trends in Birth Characteristics, Massachusetts: 1990, 1997-2011

Characteristic		1990	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Births[1]	**n**[2]	92,461	80,321	81,406	80,866	81,582	81,014	80,624	80,167	78,460	76,824	77,670	77,934	76,969	74,966	72,835	73,169
	Rate[3]	62.1	54.7	55.6	55.9	57.1	56.6	56.8	56.8	56.2	55.6	56.9	57.2	56.5	55.1	53.7	54.1
Race of Mother																	
White non-Hispanic	**n**	72,483	61,204	61,764	60,402	60,051	59,115	58,136	57,604	55,322	53,469	52,975	52,620	51,760	49,759	48,466	45,973
	%[4]	78.4	76.2	75.9	74.7	73.6	73.0	72.1	71.9	70.5	69.6	68.2	67.5	67.2	66.4	66.5	62.8
Black non-Hispanic	**n**	7,158	5,482	5,549	5,844	5,755	5,862	5,948	5,902	6,053	6,077	6,452	6,462	6,652	6,945	6,794	6,999
	%[4]	7.7	6.8	6.8	7.2	7.1	7.2	7.4	7.4	7.7	7.9	8.3	8.3	8.6	9.3	9.3	9.6
Asian	**n**	3,349	3,719	3,748	4,138	4,667	4,784	5,300	5,224	5,454	5,251	5,469	5,758	5,958	5,939	5,817	6,022
	%[4]	3.6	4.6	4.6	5.2	5.7	5.9	6.6	6.5	7.0	6.8	7.0	7.4	7.7	7.9	8.0	8.2
Hispanic	**n**	8,406	8,211	8,665	8,815	9,247	9,410	9,543	9,764	9,798	10,061	10,696	10,861	10,895	10,986	10,588	12,777
	%[4]	9.1	10.2	10.6	10.9	11.3	11.6	11.8	12.2	12.5	13.1	13.8	13.9	14.2	14.7	14.5	17.5
Teen Births	**n**	7,258	5,801	5,823	5,515	5,305	4,979	4,642	4,639	4,559	4,539	4,722	4,944	4,583	4,477	3,907	3,480
(Ages 15-19)	**Rate**[3]	35.4	28.5	28.1	26.7	25.9	24.9	23.3	23.0	22.2	21.7	21.3	22.0	20.1	19.5	17.1	15.4
Births to Unmarried	**n**	22,837	20,640	21,191	21,448	21,621	21,620	21,604	22,262	22,376	23,170	24,977	26,010	26,146	26,029	25,220	25,349
	%	24.7	25.7	26.0	26.5	26.5	26.7	26.8	27.8	28.5	30.2	32.2	33.4	34.0	34.7	34.6	34.8
Cesarean Deliveries	**n**	20,615	15,742	16,975	18,080	19,086	20,639	22,553	23,392	24,295	24,732	25,901	26,240	26,240	25,067	24,244	23,062
	%	22.3	19.6	20.9	22.4	23.4	25.5	28.0	29.2	31.0	32.3	33.4	33.7	34.3	33.6	33.3	32.5
Gestational Diabetes[5]	**n**					2,245	2,402	2,633	2,693	2,741	2,666	2,925	3,279	3,086	3,445	3,368	3,698
	%					2.8	3.0	3.3	3.4	3.5	3.5	3.8	4.2	4.0	4.7	4.7	5.1
Low Birthweight[6]	**n**	5,388	5,617	5,655	5,708	5,711	5,795	6,060	6,115	6,125	6,073	6,150	6,147	5,955	5,804	5,650	5,458
	%	5.8	7.0	7.0	7.1	7.1	7.2	7.5	7.6	7.8	7.9	7.9	7.9	7.8	7.8	7.8	7.6
Preterm[7]	**n**	5,899	5,831	6,117	6,136	6,582	6,412	6,795	6,963	7,222	6,925	6,954	6,980	6,750	6,516	6,234	5,992
	%	6.5	7.3	7.6	7.6	8.3	8.0	8.5	8.7	9.2	9.0	9.0	9.0	8.8	8.7	8.6	8.4
Late Preterm[8]	**n**	3,977	3,949	4,186	4,153	4,509	4,428	4,726	4,800	5,016	4,808	4,918	4,945	4,753	4,602	4,361	4,206
	%	4.4	4.9	5.2	5.2	5.7	5.5	5.9	6.0	6.4	6.3	6.3	6.4	6.2	6.2	6.0	5.9
Prenatal Care																	
Public Pay Prenatal Care[9]	**%**	25.1	24.2	24.5	26.1	26.5	27.2	27.9	28.3	29.9	31.9	33.5	34.9	34.5	35.3	35.8	38.9
APNCU Index[10]	**%**		82.9	82.9	82.9	83.3	85.2	84.7	84.5	84.2	84.0	83.1	82.8	82.1	84.3	84.9	82.8
Adjusted APNCU Index[11]	**%**																85.3

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. Births presented in all tables are resident live births unless otherwise specified. 2. Differences in numbers of births from previous publications are the result of updated files. 3. Birth rates represent the total number of births to women ages 15-44 years per 1,000 females ages 15-44; teen birth rates refer to number of births per 1,000 females ages 15-19. 4. Percentages are calculated based on births, including those to mothers of unknown race.
5. Gestational diabetes is defined as glucose intolerance found during pregnancy for the first time. It excludes cases with pre-existing diabetes. 6. Low birthweight: less than 2,500 grams or 5.5 pounds. 7. Preterm: <37 weeks gestation. 8. Late preterm: 34-36 weeks of gestation. 9. Government programs including CommonHealth, Healthy Start, Medicaid/MassHealth, and Medicare (may also be HMO or managed care), or free care; other: Worker's Compensation and other sources. 10. Beginning with Births 2001, the APNCU Index has replaced the Kessner Index as the standard measurement of adequacy of prenatal care (see Technical Notes for more information). 11. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.

Table 2. Birth Characteristics by Maternal Race/Hispanic Ethnicity and Birthplace, Massachusetts: 2011

Race and Hispanic Ethnicity (by mother's birthplace)	Births		Teen Births				Birthweight				Prenatal Care				Cesarean Deliveries		Breastfeeding[5]	
			<18 Years		<20 Years		Very Low[2]		Low[3]		Adequate[4]		1st Trimester					
	n	%[1]	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
State Total	**73,169**	**100.0**	**1,025**	**1.4**	**3,515**	**4.8**	**956**	**1.3**	**5,458**	**7.6**	**50,756**	**85.3**	**57,900**	**83.0**	**23,062**	**32.5**	**58,432**	**82.5**
US inc. DC	51,200	70.0	811	1.6	2,817	5.5	635	1.3	3,776	7.5	35,690	87.0	41,222	84.8	16,039	32.4	38,848	78.8
US Territories[7]	1,513	2.1	83	5.5	231	15.3	27	1.8	152	10.1	1,018	77.7	1,115	76.1	477	31.8	1,137	76.2
Non-US-born[8]	20,452	28.0	131	0.6	467	2.3	293	1.5	1,529	7.6	14,046	82.0	15,560	78.9	6,545	32.6	18,447	92.1
White Non-Hispanic	**45,973**	**62.8**	**343**	**0.7**	**1,436**	**3.1**	**507**	**1.1**	**3,130**	**6.9**	**32,074**	**88.2**	**37,730**	**86.1**	**14,683**	**33.0**	**35,899**	**80.9**
US inc. DC	41,099	89.4	336	0.8	1,391	3.4	456	1.1	2,793	6.9	28,653	88.5	33,827	86.5	13,223	33.3	31,456	79.4
US Territories[7]	23	0.1	0	0.0	1	--[6]	0	0.0	1	--[6]	10	66.7	16	80.0	3	--[6]	23	100.0
Non-US-born[8]	4,849	10.5	7	0.1	44	0.9	50	1.0	335	7.0	3,410	85.9	3,886	82.8	1,457	30.6	4,420	92.8
Black non-Hispanic	**6,999**	**9.6**	**117**	**1.7**	**448**	**6.4**	**155**	**2.2**	**707**	**10.2**	**4,869**	**76.5**	**4,974**	**72.8**	**2,315**	**33.4**	**5,859**	**84.8**
US inc. DC	3,184	45.5	102	3.2	365	11.5	69	2.2	365	11.5	2,380	81.3	2,414	77.8	942	30.0	2,343	74.9
US Territories[7]	1	--[6]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-US-born[8]	3,814	54.5	15	0.4	83	2.2	86	2.3	342	9.0	2,489	72.4	2,560	68.7	1,373	36.2	3,516	93.0
Hispanic	**12,777**	**17.5**	**513**	**4.0**	**1,467**	**11.5**	**197**	**1.6**	**1,021**	**8.1**	**8,984**	**80.9**	**9,614**	**77.9**	**3,941**	**31.3**	**10,497**	**83.7**
US inc. DC	5,039	39.4	330	6.5	928	18.4	78	1.6	441	8.8	3,589	80.6	3,796	77.6	1,439	28.9	3,738	75.3
US Territories[7]	1,483	11.6	83	5.6	230	15.5	27	1.8	151	10.2	1,006	77.9	1,098	76.1	472	32.1	1,111	75.8
Non-US-born[8]	6,254	48.9	100	1.6	309	4.9	92	1.5	429	7.0	4,389	82.0	4,719	78.5	2,030	33.1	5,648	92.5
Asian	**6,022**	**8.2**	**36**	**0.6**	**108**	**1.8**	**67**	**1.1**	**490**	**8.2**	**4,201**	**86.3**	**4,898**	**83.4**	**1,783**	**30.0**	**5,317**	**89.5**
US inc. DC	1,025	17.0	34	3.3	90	8.8	15	1.5	109	10.7	735	85.8	825	82.4	255	25.2	876	86.6
US Territories[7]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-US-born[8]	4,997	83.0	2	--[6]	18	0.4	52	1.0	381	7.7	3,466	86.4	4,073	83.6	1,528	30.9	4,441	90.1
American Indian[9]	**247**	**0.3**	**4**	**--[6]**	**15**	**6.1**	**4**	**--[6]**	**24**	**9.8**	**154**	**73.7**	**171**	**71.5**	**68**	**28.1**	**177**	**73.1**
US inc. DC	237	96.0	4	--[6]	15	6.3	4	--[6]	24	10.3	149	73.4	164	71.0	67	28.8	169	72.5
US Territories[7]	1	--[6]	0	0.0	0	0.0	0	0.0	0	0.0	1	--[6]	1	--[6]	0	0.0	1	--[6]
Non-US-born[8]	9	3.6	0	0.0	0	0.0	0	0.0	0	0.0	4	--[6]	6	85.7	1	--[6]	7	87.5
Other[10]	**541**	**0.7**	**5**	**0.9**	**18**	**3.3**	**13**	**2.4**	**48**	**9.0**	**350**	**81.0**	**385**	**79.1**	**185**	**36.6**	**432**	**85.7**
US inc. DC	165	30.5	2	--[6]	13	7.9	6	3.7	17	10.4	111	78.7	118	78.1	50	32.3	107	69.0
US Territories[7]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-US-born[8]	376	69.5	3	--[6]	5	1.3	7	1.9	31	8.3	239	82.1	267	79.5	135	38.6	325	93.1
Unknown[11]	**610**	**0.8**	**7**	**1.1**	**23**	**3.8**	**13**	**3.9**	**38**	**11.3**	**124**	**81.6**	**128**	**76.6**	**87**	**27.2**	**251**	**81.2**

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. In the column "Births %," the percentages of the race/Hispanic groups (bolded) are based on the state total (including births of unknown race/ethnicity), and the birthplace percents for the race/ethnicities are based on the total number in race/Hispanic ethnicity category. For all other categories, percentages are based on row totals. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low birthweight: less than 2,500 grams or 5.5 pounds. 4 Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 5. Infant was being breastfed at time of discharge. 6. Calculations based on 1-4 events are excluded. 7. The category "US Territories" includes women born in Puerto Rico, the US Virgin Islands, and Guam. Approximately 95% of the births in this category were to women born in Puerto Rico. 8. The category "Non-US-born" includes women born outside of the 50 US states, District of Columbia, and the US territories. 9. Mothers who selected American Indian as their race. 10. Mothers who indicated "Other" as their race.
11. Mothers who did not indicate a race/ethnicity.

Table 3. Birth Characteristics by Maternal Ancestry, Massachusetts: 2011

Maternal Ancestry	Births[1]		Teen Births				Low Birthweight[2]		Prenatal Care				Late Preterm[4]		Cesarean Section		Breast-feeding[5]		Gestational Diabetes[6]	
			<18 years		<20 Years				Adequate[3]		1st Trimester									
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
State Total	**73,169**	**100.0**	**1,025**	**1.4**	**3,515**	**4.8**	**5,458**	**7.6**	**50,756**	**85.3**	**57,900**	**83.0**	**4,206**	**5.9**	**23,062**	**32.5**	**58,432**	**82.5**	**3,698**	**5.1**
American	34,162	46.7	355	1.0	1,444	4.2	2,329	6.9	24,560	88.3	28,439	86.1	2,035	6.1	11,044	32.8	26,424	78.7	1,558	4.6
European	10,144	13.9	39	0.4	163	1.6	615	6.2	6,790	89.7	8,595	87.3	579	5.8	3,233	32.4	8,852	88.8	398	4.0
Puerto Rican	4,675	6.4	305	6.5	852	18.2	458	9.8	3,284	78.4	3,485	75.9	297	6.4	1,378	29.7	3,311	71.7	253	5.4
African American	3,164	4.3	102	3.2	338	10.7	370	11.8	2,340	80.2	2,413	77.6	225	7.2	989	31.5	2,360	75.4	118	3.7
Dominican	2,497	3.4	85	3.4	254	10.2	184	7.5	1,867	81.4	1,944	80.8	120	4.9	875	35.8	2,182	89.4	117	4.8
Asian Indian	1,850	2.5	2	--[7]	5	0.3	178	9.7	1,087	87.3	1,536	85.6	105	5.7	668	36.4	1,758	96.1	169	9.2
Brazilian	1,760	2.4	10	0.6	35	2.0	120	6.9	1,163	87.6	1,426	83.4	95	5.5	771	44.6	1,629	94.3	108	6.2
Portuguese	1,711	2.3	33	1.9	114	6.7	135	8.0	1,284	84.3	1,335	80.3	100	6.0	624	37.2	1,101	65.7	110	6.5
African	1,665	2.3	5	0.3	16	1.0	119	7.2	1,021	73.1	1,126	70.1	79	4.8	590	35.6	1,558	94.6	135	8.2
Chinese	1,600	2.2	2	--[7]	10	0.6	93	5.8	1,237	90.8	1,372	87.6	100	6.3	436	27.5	1,422	89.9	147	9.2
Haitian	1,290	1.8	8	0.6	32	2.5	146	11.3	850	69.9	839	65.8	80	6.2	487	38.0	1,171	91.4	86	6.7
Cape Verdean	1,176	1.6	30	2.6	124	10.5	104	8.9	880	77.0	829	71.5	72	6.2	364	31.2	980	84.2	51	4.3
Salvadoran	1,147	1.6	47	4.1	101	8.8	81	7.1	862	81.9	875	77.4	64	5.6	234	20.5	1,066	93.6	75	6.6
Middle Eastern	1,025	1.4	2	--[7]	8	0.8	74	7.2	673	79.0	792	78.4	57	5.6	306	30.1	953	93.3	56	5.5
Guatemalan	910	1.2	18	2.0	63	6.9	64	7.5	575	78.1	571	68.5	43	5.0	229	26.8	762	89.3	55	6.4
Cambodian	680	0.9	24	3.5	60	8.8	70	10.5	507	79.1	478	71.8	52	7.8	143	21.4	480	72.1	49	7.3
Vietnamese	668	0.9	4	--[7]	16	2.4	66	9.9	484	83.9	538	82.1	39	5.9	189	28.5	529	80.3	65	9.8
Mexican	515	0.7	17	3.3	43	8.3	27	5.3	350	81.4	379	77.0	21	4.2	150	29.8	441	87.8	28	5.5
West Indian Caribbean	508	0.7	6	1.2	28	5.5	46	9.1	380	81.5	391	78.4	46	9.1	166	32.9	453	89.9	27	5.4
Other South American	498	0.7	6	1.2	22	4.4	23	4.6	341	81.2	374	77.0	24	4.8	165	33.3	468	94.4	33	6.7
Korean	446	0.6	1	--[7]	2	--[7]	24	5.5	322	86.3	361	84.3	24	5.5	131	30.3	406	93.8	22	5.0
Russian	444	0.6	0	0.0	2	--[7]	36	8.3	302	82.3	351	81.8	28	6.5	100	23.1	388	90.0	35	8.1
Native Americans	357	0.5	3	--[7]	30	8.4	27	7.6	243	80.2	252	72.2	21	5.9	108	30.6	260	73.7	11	3.1

NOTE: **The revised standards also require federal data collection programs to allow respondents to select one or more ancestry categories. The method used to bridge responses for those who report more than one ancestry is based on a procedure whereby multiple ancestries are assigned to each of the ancestries listed.**

All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. In 2009, certain ancestry groups were combined: Lebanese, Iranian, Israeli, and Other Middle Eastern ancestries were combined into "Middle Eastern"; and Nigerian and Other African were combined into "African." 1. In the column "Births," percentages are based on column total (state total of births, including births for which maternal ethnicity is unknown and other). For all other categories, percentages are based on row totals. 2. Low birthweight: less than 2,500 grams or 5.5 pounds. 3. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 4. Late preterm: 34-36 weeks gestation. 5. Infant was being breastfed at time of discharge. 6. Gestational diabetes is defined as glucose intolerance found during pregnancy for the first time. It excludes cases with pre-existing diabetes. 7. Calculations based on 1-4 events are excluded.

Figure 1. Trends in the Percent of Births by Mother's Age Group, Massachusetts: 1980-2011

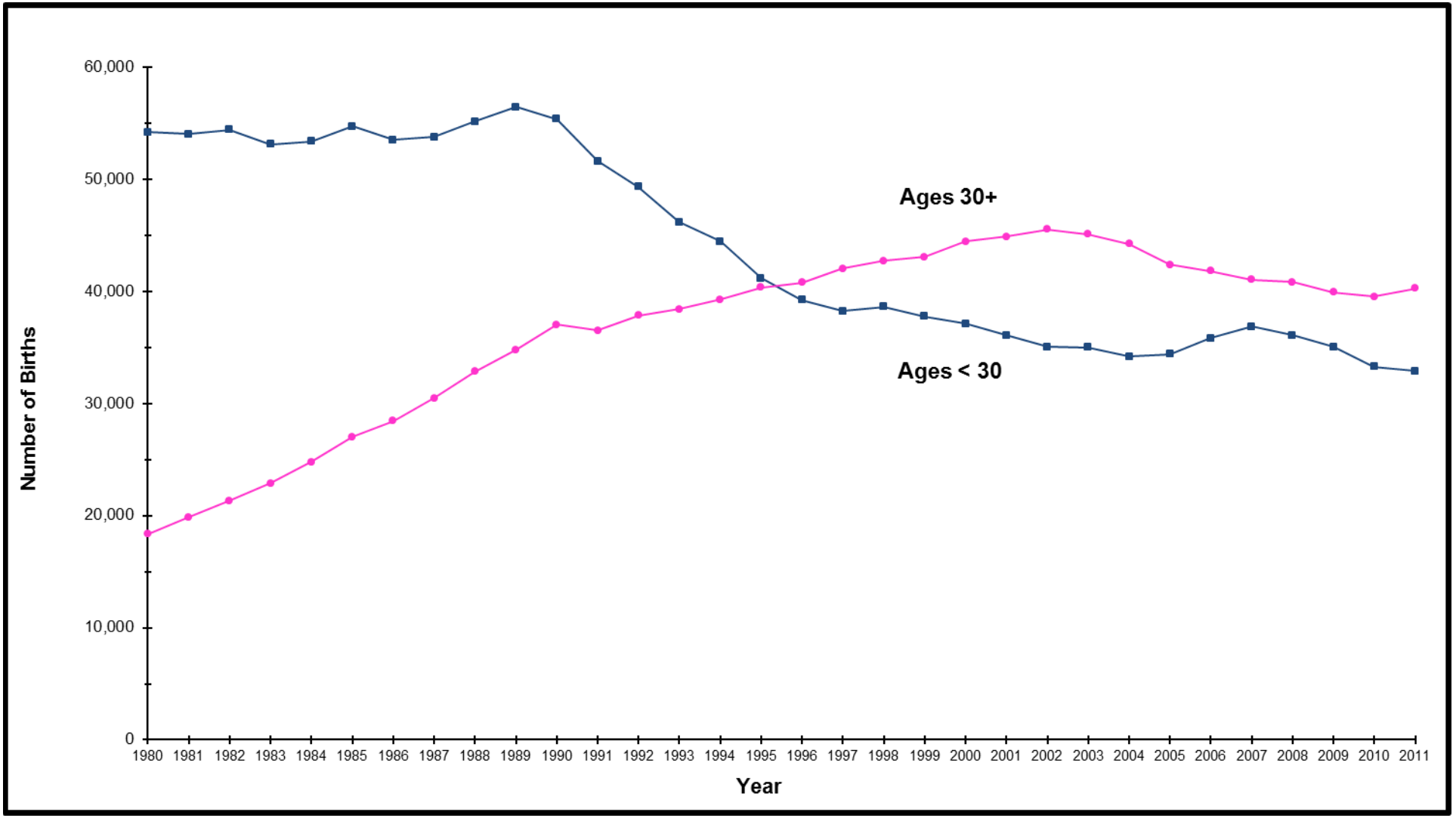


Table 4. Age-Specific and Crude Birth Rates, Massachusetts: 1990 and 2011

	1990		2011		
Mother's Age	**Births[1]**	**Rate**	**Births**	**Rate[2]**	**Percent Change in Rate**
10-14	124	1.3	31	0.2	-84.6%
15-19	7,259	35.1	3,480	15.4	-56.1%
20-24	18,115	69.5	11,145	46.8	-32.7%
25-29	29,913	107.2	18,238	80.0	-25.4%
30-34	25,687	93.9	24,016	113.9	21.3%
35-39	9,795	40.1	12,952	63.0	57.1%
40-44	1,522	6.9	3,080	12.9	87.0%
45+[3]	46	0.3	223	0.9	200.0%
Birth Rate[4] (ages 15-44)	92,290	62.2	72,911	54.1	-13.0%
Crude Birth Rate[5]	92,461	15.4	73,169	11.1	-27.9%

NOTE: All percentages are calculated based on only births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Differences in the number of births from previous publications are the result of updated files. The number of births for all age groups does not always add to the total number of births because mother's age is sometimes not recorded on the birth certificate.
2. Population estimates from the National Center for Health Statistics for 2009 were used to calculate birth rates at the state level.
3. Denominator is the female population ages 45-49.
4. Rate represents the total number of births to women ages 15-44 per 1,000 females in the population ages 15 to 44.
5. Births per 1,000 residents (male and female). Includes births to mothers of all age groups and mothers for whom age is unknown.

Table 5. Trends in Number and Percent Distribution of Births by Plurality and Age, Massachusetts: 1997-2011

Age Group / Year	Singletons		Multiples[1]						Total births[2]	
			Twins		Triplets or more		Total Multiples			
	n	%	n	%	n	%	n	%	n	%
All Ages										
1997	77,203	96.1	2,856	3.6	262	0.3	3,118	3.9	80,321	100.0
1998	78,004	95.8	3,114	3.8	288	0.4	3,402	4.2	81,406	100.0
1999	77,473	95.8	3,147	3.9	246	0.3	3,393	4.2	80,866	100.0
2000	78,075	95.7	3,263	4.0	244	0.3	3,507	4.3	81,582	100.0
2001	77,409	95.6	3,371	4.2	234	0.3	3,605	4.4	81,014	100.0
2002	76,673	95.1	3,708	4.6	243	0.3	3,951	4.9	80,624	100.0
2003	76,367	95.3	3,551	4.4	249	0.3	3,800	4.7	80,167	100.0
2004	74,677	95.2	3,538	4.5	245	0.3	3,783	4.8	78,460	100.0
2005	73,258	95.4	3,375	4.4	190	0.2	3,565	4.6	76,824	100.0
2006	74,146	95.5	3,375	4.3	149	0.2	3,524	4.5	77,670	100.0
2007	74,498	95.6	3,310	4.2	126	0.2	3,436	4.4	77,934	100.0
2008	73,475	95.5	3,365	4.4	129	0.2	3,494	4.5	76,969	100.0
2009	71,423	95.3	3,386	4.5	157	0.2	3,543	4.7	74,966	100.0
2010	69,508	95.4	3,220	4.4	107	0.1	3,327	4.6	72,835	100.0
2011	69,933	95.6	3,135	4.3	100	0.1	3,235	4.4	73,169	100.0
Ages <35										
1997	62,598	96.7	1,949	3.0	170	0.3	2,119	3.3	64,717	100.0
1998	62,719	96.4	2,193	3.4	170	0.3	2,363	3.6	65,082	100.0
1999	61,816	96.4	2,147	3.3	150	0.2	2,297	3.6	64,113	100.0
2000	61,659	96.4	2,205	3.4	130	0.2	2,335	3.6	63,994	100.0
2001	60,704	96.3	2,211	3.5	134	0.2	2,345	3.7	63,049	100.0
2002	59,736	96.0	2,379	3.8	127	0.2	2,506	4.0	62,242	100.0
2003	59,347	95.9	2,389	3.9	118	0.2	2,507	4.1	61,854	100.0
2004	57,618	96.0	2,229	3.7	142	0.2	2,371	4.0	59,989	100.0
2005	56,380	96.3	2,086	3.6	102	0.2	2,188	3.7	58,569	100.0
2006	57,237	96.3	2,116	3.6	89	0.1	2,205	3.7	59,442	100.0
2007	57,977	96.3	2,144	3.6	87	0.1	2,231	3.7	60,208	100.0
2008	57,080	96.3	2,111	3.6	78	0.1	2,189	3.7	59,269	100.0
2009	55,906	96.1	2,202	3.8	80	0.1	2,282	3.9	58,188	100.0
2010	54,369	96.3	2,018	3.6	58	0.1	2,076	3.7	56,445	100.0
2011	54,837	96.4	2,014	3.5	59	0.1	2,073	3.6	56,910	100.0
Ages 35+										
1997	14,602	93.6	907	5.8	92	0.6	999	6.4	15,601	100.0
1998	15,282	93.6	921	5.6	118	0.7	1,039	6.4	16,321	100.0
1999	15,657	93.5	1,000	6.0	96	0.6	1,096	6.5	16,753	100.0
2000	16,412	93.3	1,058	6.0	114	0.6	1,172	6.7	17,584	100.0
2001	16,703	93.0	1,160	6.5	100	0.6	1,260	7.0	17,963	100.0
2002	16,936	92.1	1,329	7.2	116	0.6	1,445	7.9	18,381	100.0
2003	17,015	92.9	1,162	6.3	131	0.7	1,293	7.1	18,308	100.0
2004	17,055	92.4	1,309	7.1	103	0.6	1,412	7.6	18,467	100.0
2005	16,874	92.5	1,289	7.1	88	0.5	1,377	7.5	18,251	100.0
2006	16,901	92.8	1,257	6.9	60	0.3	1,317	7.2	18,218	100.0
2007	16,519	93.2	1,166	6.6	39	0.2	1,205	6.8	17,724	100.0
2008	16,392	92.6	1,254	7.1	51	0.3	1,305	7.4	17,697	100.0
2009	15,513	92.5	1,184	7.1	77	0.5	1,261	7.5	16,774	100.0
2010	15,136	92.4	1,200	7.3	49	0.3	1,249	7.6	16,385	100.0
2011	15,092	92.8	1,121	6.9	41	0.3	1,162	7.1	16,255	100.0

1. Numbers of multiples (n) represent individual infants rather than sets of infants. 2. Differences in the number of births from previous publications are the result of updated files.

Table 6. Summary of Selected Teen Birth Characteristics, Massachusetts: 2011

	Ages 15-17		Ages 18-19		Combined Ages 15-19	
	N	%[1]	N	%[1]	N	%[1]
State total	990	28.4%	2,490	71.6%	3,480	100.0%
Maternal Demographics						
Race/Hispanic Ethnicity	**N**	**%[2]**	**N**	**%[2]**	**N**	**%[2]**
White non-Hispanic	331	33.6%	1,093	44.2%	1,424	41.2%
Black non-Hispanic	113	11.5%	331	13.4%	444	12.8%
Asian	36	3.7%	72	2.9%	108	3.1%
Hispanic	496	50.4%	954	38.6%	1,450	41.9%
Other	9	0.9%	24	1.0%	33	1.0%
Birthplace						
US States / D.C.	782	79.0%	2,006	80.6%	2,788	80.1%
Puerto Rico / US Terr.	82	8.3%	148	5.9%	230	6.6%
Non-US-born	126	12.7%	336	13.5%	462	13.3%
Prenatal care funding						
Public	760	79.2%	1,867	77.1%	2,627	77.7%
Private, other	199	20.8%	556	22.9%	755	22.3%
Pregnancy-Related Factors						
Adequacy of Prenatal Care[3]						
Adequate Total[4]	612	64.8%	1654	70.2%	2266	68.7%
Adequate Intensive	307	32.5%	759	32.2%	1066	32.3%
Adequate Basic	305	32.3%	895	38.0%	1200	36.4%
Intermediate	76	8.0%	187	7.9%	263	8.0%
Inadequate/None	203	21.5%	354	15.0%	557	16.9%
Unknown	54	5.7%	160	6.8%	214	6.5%
Parity[5]						
1	903	92.4%	2,056	83.7%	2,959	86.2%
2	68	7.0%	362	14.7%	430	12.5%
3+	6	0.6%	37	1.5%	43	1.3%
Smoking during Pregnancy						
Yes	71	7.4%	345	14.2%	416	12.3%
No	892	92.6%	2,082	85.8%	2,974	87.7%
Birth Outcomes						
Birthweight						
< 500 g	4	--[6]	7	0.3%	11	0.3%
500-1,499 g	17	1.7%	35	1.4%	52	1.5%
1,500-2,499 g	79	8.1%	164	6.7%	243	7.1%
LBW (<2,499 g)	100	10.2%	206	8.4%	306	8.9%
2,500-3,999 g	831	85.1%	2,119	86.3%	2,950	86.0%
4000+ g	46	4.7%	129	5.3%	175	5.1%
Gestational age						
< 28 weeks	11	1.1%	23	0.9%	34	1.0%
< 37 weeks	91	9.4%	220	9.0%	311	9.1%
37-42 weeks	879	90.6%	2,216	91.0%	3,095	90.9%
43+ weeks	0	0.0%	0	0.0%	0	0.0%
Plurality						
Singleton	978	98.8%	2,435	97.8%	3,413	98.1%
Multiple birth	12	1.2%	55	2.2%	67	1.9%

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

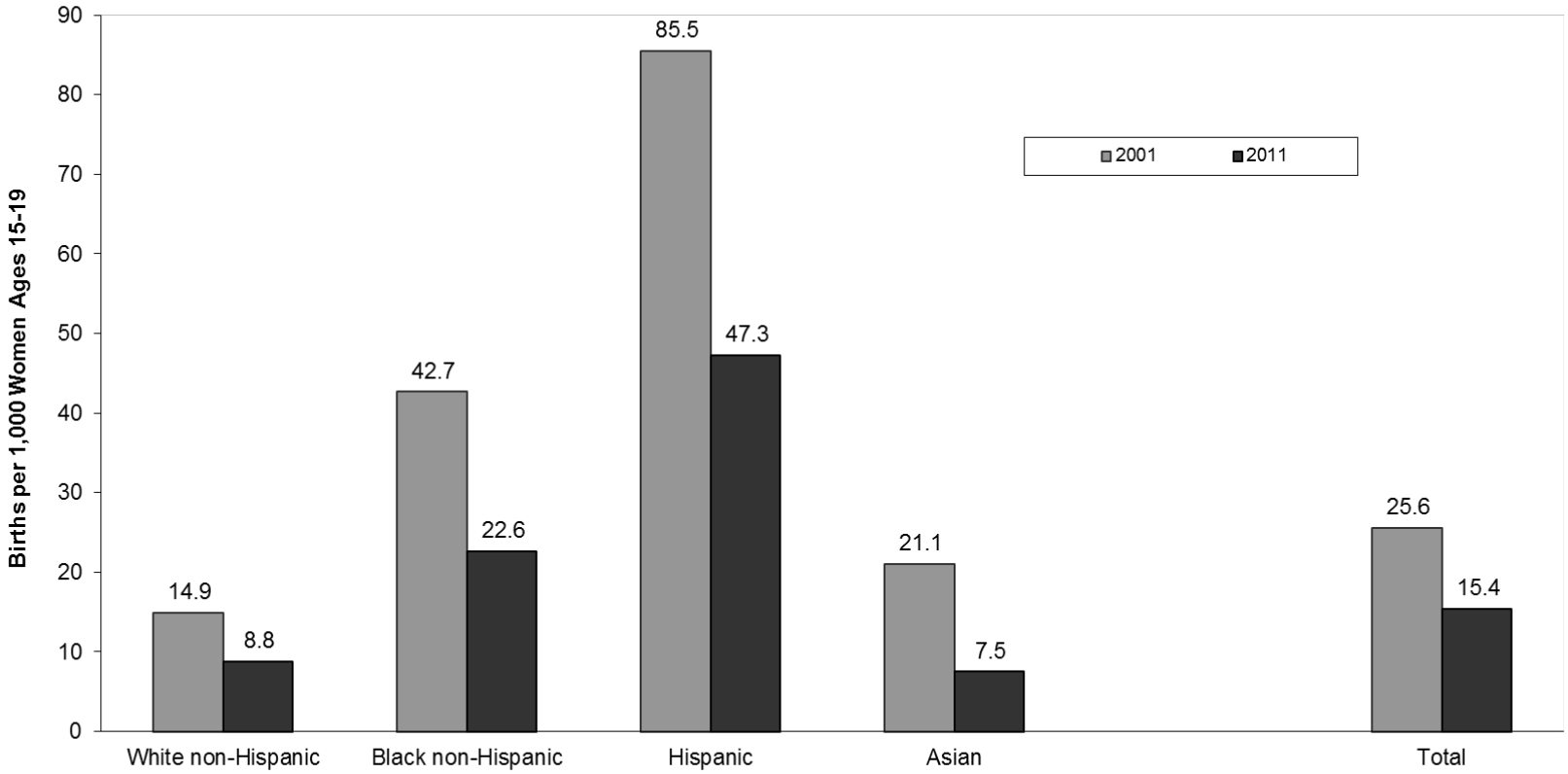
1. For state total row, percentages are based on total births to females ages 15-19. For the rest of the table, percentages are based on births for a given age group and characteristic. 2. Percents are based on state total of the age group. 3. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 4. Adequate Total = Adequate Basic + Adequate Intensive. 5. Number of live births including the current birth. 6. Calculations based on 1-4 events are excluded.

Table 7. Trends in Teen Birth Rates for Selected Communities, Ranked by 2011 Teen Birth Rate, Massachusetts: 2001, 2010, 2011

2011 Rank	Municipality[1]	2001		2010		2011	
		Number of Teen Births	Teen Birth Rate[2]	Number of Teen Births	Teen Birth Rate[2,3]	Number of Teen Births	Teen Birth Rate[2,3]
	State Total	**4,979**	**24.9**	**3,907**	**17.1**	**3,480**	**15.4**
1	HOLYOKE	133	93.9	126	83.6	103	68.3
2	CHELSEA	89	88.5	62	51.8	69	57.6
3	SPRINGFIELD	431	74.8	371	54.3	367	53.7
4	SOUTHBRIDGE	43	80.2	28	49.0	28	49.0
5	LAWRENCE	271	98.0	193	56.8	163	48.0
6	NEW BEDFORD	185	65.0	144	47.4	137	45.1
7	FALL RIVER	155	55.7	124	44.6	115	41.4
8	LYNN	158	53.7	149	46.2	119	36.9
9	LOWELL	215	56.1	184	44.7	151	36.7
10	BROCKTON	170	50.3	119	35.5	121	36.1
11	PITTSFIELD	49	37.3	46	34.4	45	33.6
12	FITCHBURG	91	61.5	58	32.6	56	31.5
13	HAVERHILL	62	34.8	56	31.3	56	31.3
14	CHICOPEE	73	42.4	52	27.6	47	25.0
15	WORCESTER	269	39.9	244	31.6	193	25.0
16	REVERE	50	45.4	37	25.8	35	24.4
17	EVERETT	28	27.4	32	24.3	31	23.5
18	TAUNTON	63	39.9	49	28.1	36	20.6
19	LEOMINSTER	37	31.0	34	26.0	27	20.6
20	MALDEN	28	20.5	17	11.0	29	18.7
21	METHUEN	49	39.2	26	16.0	27	16.6
22	BOSTON	702	34.2	503	19.4	401	15.4
23	SOMERVILLE	42	20.4	30	17.5	26	15.2
24	FRAMINGHAM	46	24.4	52	22.1	31	13.2
25	QUINCY	30	15.4	31	15.6	25	12.6

1. Selected communities include the 25 Massachusetts cities and towns with the highest teen birth rates. Ranking is by 2011 teen birth rate. 2. Rates are per 1,000 females ages 15-19 per city/town. 3. Birth rates for cities and towns were calculated using the Massachusetts Department of Public Health Race Allocated Census 2010 Estimates file (MRACE 2010), which is the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. **Please note**: If the population in your community increased from 2010 to 2011, the rates listed may **overestimate** the actual rate. If the population in your community declined from 2010 to 2011, the rates given in the publication may **underestimate** the actual rate.

Figure 2. Birth Rates among Females Ages 15-19 Years by Mother's Race/Hispanic Ethnicity, Massachusetts: 2001 and 2011



Note: Teen birth rate is number of births to females ages 15-19 per 1,000 females ages 15-19. Birth rates are based upon the 2000 Census population and the National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2010-July 1, 2011, by year, county, single-year of age (0, 1, 2, .., 85 years and over), bridged race, Hispanic origin, and sex (Vintage 2011).

Table 8. Births by Birthweight, Race/Hispanic Ethnicity, Massachusetts: 2011

Birthweight (in grams)	Total		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other		Unknown race/ethnicity	
	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]
State Total	**73,169**	**100.0**	**45,973**	**100.0**	**6,999**	**100.0**	**12,777**	**100.0**	**6,022**	**100.0**	**788**	**100.0**	**610**	**100.0**
< 500	84	0.1	37	0.1	13	0.2	25	0.2	4	--[2]	1	--[2]	4	--[2]
500-999	321	0.4	158	0.3	61	0.9	66	0.5	27	0.5	6	0.8	3	--[2]
1,000-1,499	551	0.8	312	0.7	81	1.2	106	0.8	36	0.6	10	1.3	6	1.8
1,500-1,999	1,101	1.5	646	1.4	146	2.1	216	1.7	78	1.3	11	1.4	4	--[2]
2,000-2,499	3,401	4.7	1,977	4.4	406	5.8	608	4.8	345	5.8	44	5.6	21	6.3
2,500-2,999	11,777	16.4	6,479	14.3	1,416	20.3	2,297	18.2	1,386	23.2	144	18.5	55	16.4
3,000-3,499	27,175	37.8	16,492	36.5	2,640	37.9	5,108	40.5	2,515	42.1	301	38.6	119	35.5
3,500-3,999	20,680	28.7	14,064	31.1	1,718	24.7	3,265	25.9	1,337	22.4	206	26.4	90	26.9
4,000-4,499	5,793	8.1	4,310	9.5	412	5.9	789	6.3	203	3.4	49	6.3	30	9.0
4,500-4,999	970	1.3	738	1.6	63	0.9	119	0.9	40	0.7	7	0.9	3	--[2]
>=5,000	81	0.1	56	0.1	7	0.1	16	0.1	1	--[2]	1	--[2]	0	0.0
Unknown birthweight	1,235	1.7	704	1.5	36	0.5	162	1.3	50	0.8	8	1.0	275	45.1
VLBW[3] (0-1,499 g)	956	1.3	507	1.1	155	2.2	197	1.6	67	1.1	17	2.2	13	3.9
LBW[4] (0-2,499 g)	5,458	7.6	3,130	6.9	707	10.2	1,021	8.1	490	8.2	72	9.2	38	11.3

NOTE: Percentages for detailed birthweight rows ("<500" through "Unknown birthweight") are calculated based on births including those with unknown birthweight. Percentages for VLBW and LBW rows are calculated based on births with known birthweight only.

1. Percentages are based on column totals. 2. Calculations based on values of 1-4 are excluded. 3. Very Low Birthweight (VLBW): less than 1,500 grams (3.3 lbs.).
4. Low Birthweight (LBW): less than 2,500 grams (5.5 lbs.).

Table 9. Low Birthweight by Plurality and Maternal Age, Massachusetts: 2001-2011

Age Group (years)	Year	Singleton				Multiples												Total Births			
						Twin				Triplets or more				Total Multiples							
		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Ages	2001	730	0.9	3,931	5.1	310	9.2	1,654	49.2	74	32.9	210	93.3	384	10.7	1,864	52.0	1,114	1.4	5,795	7.2
	2002	699	0.9	3,972	5.2	342	9.2	1,855	50.2	68	28.0	233	95.9	410	10.4	2,088	53.0	1,109	1.4	6,060	7.5
	2003	713	0.9	4,006	5.3	331	9.3	1,877	52.9	71	28.5	232	93.2	402	10.6	2,109	55.6	1,115	1.4	6,115	7.6
	2004	740	1.0	4,015	5.4	324	9.2	1,879	53.2	84	34.4	231	94.7	408	10.8	2,110	55.9	1,148	1.5	6,125	7.8
	2005	701	1.0	4,126	5.6	322	9.5	1,765	52.3	75	39.5	181	95.3	397	11.1	1,946	54.6	1,098	1.4	6,072	7.9
	2006	687	0.9	4,264	5.8	308	9.1	1,746	51.8	46	31.1	140	94.6	354	10.1	1,886	53.6	1,041	1.3	6,150	7.9
	2007	693	0.9	4,258	5.7	306	9.2	1,772	53.6	54	42.9	117	92.9	360	10.5	1,889	55.0	1,053	1.4	6,147	7.9
	2008	627	0.9	4,039	5.5	324	9.7	1,803	53.8	55	42.6	113	87.6	379	10.9	1,916	55.1	1,006	1.3	5,955	7.8
	2009	677	1.0	3,886	5.5	276	8.2	1,771	52.7	61	38.9	147	93.6	337	9.6	1,918	54.5	1,014	1.4	5,804	7.8
	2010	643	0.9	3882	5.6	288	8.9	1668	51.8	30	28.8	100	96.2	318	9.6	1768	53.2	961	1.3	5650	7.8
	2011	629	0.9	3824	5.6	286	9.2	1541	49.8	41	41.0	93	93.0	327	10.2	1634	51.2	956	1.3	5458	7.6
Ages < 35	2001	576	1.0	3,147	5.2	235	10.7	1,156	52.4	41	31.3	120	91.6	276	11.8	1,276	54.6	852	1.4	4,423	7.0
	2002	537	0.9	3,129	5.2	237	10.0	1,229	51.9	42	33.1	125	98.4	279	11.2	1,354	54.2	816	1.3	4,483	7.2
	2003	539	0.9	3,161	5.3	256	10.7	1,325	55.5	38	32.2	114	96.6	294	11.7	1,439	57.5	833	1.3	4,600	7.5
	2004	565	1.0	3,128	5.4	207	9.3	1,224	55.0	56	39.7	133	94.3	263	11.1	1,357	57.3	828	1.4	4,485	7.5
	2005	552	1.0	3,198	5.7	215	10.3	1,149	55.1	47	46.1	100	98.0	262	12.0	1,249	57.1	814	1.4	4,447	7.6
	2006	534	0.9	3,342	5.8	217	10.3	1,157	54.8	28	31.5	83	93.3	245	11.1	1,240	56.3	779	1.3	4,582	7.7
	2007	533	0.9	3,317	5.7	223	10.4	1,191	55.6	45	51.7	85	97.7	268	12.0	1,276	57.2	801	1.3	4,593	7.6
	2008	492	0.9	3,134	5.5	218	10.4	1,181	56.2	34	43.6	70	89.7	252	11.6	1,251	57.4	744	1.3	4,385	7.4
	2009	525	0.9	3,093	5.6	174	7.9	1,187	54.2	36	45.0	76	95.0	210	9.2	1,263	55.6	735	1.3	4,356	7.5
	2010	489	0.9	3071	5.7	206	10.2	1059	52.5	22	40.0	51	92.7	228	11.0	1110	53.5	717	1.3	4181	7.4
	2011	475	0.9	2964	5.5	189	9.5	1034	52.0	31	52.5	54	91.5	220	10.8	1088	53.2	695	1.2	4052	7.2
Ages 35+	2001	154	0.9	784	4.7	75	6.5	498	43.2	33	35.1	90	95.7	108	8.7	588	47.2	262	1.5	1,372	7.7
	2002	161	1.0	842	5.0	105	7.9	626	47.1	26	22.4	108	93.1	131	9.1	734	50.8	292	1.6	1,576	8.6
	2003	174	1.0	844	5.0	75	6.5	552	47.5	33	25.2	118	90.1	108	8.4	670	51.9	282	1.5	1,514	8.3
	2004	174	1.0	886	5.2	117	9.0	655	50.2	28	27.2	98	95.1	145	10.3	753	53.5	319	1.7	1,639	8.9
	2005	149	0.9	927	5.5	107	8.3	616	47.8	28	31.8	81	92.0	135	9.8	697	50.6	284	1.6	1,624	8.9
	2006	151	0.9	919	5.4	89	7.1	587	46.8	18	30.5	57	96.6	107	8.1	644	49.0	258	1.4	1,563	8.6
	2007	160	1.0	941	5.7	83	7.1	581	49.8	9	23.1	32	82.1	92	7.6	613	50.9	252	1.4	1,554	8.8
	2008	135	0.8	905	5.6	106	8.5	622	49.8	21	41.2	43	84.3	127	9.8	665	51.2	262	1.5	1,570	8.9
	2009	152	1.0	792	5.1	102	8.7	584	49.9	25	32.5	71	92.2	127	10.2	655	52.5	279	1.7	1,447	8.7
	2010	154	1.0	810	5.4	82	6.8	609	50.8	8	16.3	49	100.0	90	7.2	658	52.8	244	1.5	1468	9.0
	2011	154	1.0	860	5.8	97	8.8	507	45.9	10	24.4	39	95.1	107	9.3	546	47.6	261	1.6	1406	8.8

NOTE: Very Low Birthweight (VLBW) births are a subset of Low Birthweight (LBW) births. All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. 1. Very Low Birthweight (VLBW): less than 1,500 grams (3.3 lbs.). 2. Low Birthweight (LBW): less than 2,500 grams (5.5 lbs.).

Table 10a. Births by Gestational Age, Race/Hispanic Ethnicity, Massachusetts: 2011

Gestational Age[1] (weeks completed)	Total		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[3]		Unknown
	n	%[2]	n	%[2]	n	%[2]	n	%[2]	n	%[2]	n	%[2]	n
State Total	**73,169**	**100.0**	**45,973**	**100.0**	**6,999**	**100.0**	**12,777**	**100.0**	**6,022**	**100.0**	**788**	**100.0**	**610**
<20	39	0.1	21	0.0	7	0.1	7	0.1	4	--[4]	0	0.0	0
20-23	121	0.2	54	0.1	25	0.4	30	0.2	9	0.2	0	0.0	3
24-27	274	0.4	138	0.3	46	0.7	63	0.5	21	0.4	4	--[4]	2
28-31	591	0.8	340	0.8	75	1.1	119	0.9	49	0.8	5	0.7	3
32-33	761	1.1	445	1.0	98	1.4	156	1.2	53	0.9	8	1.1	1
34-36	4,206	5.9	2,616	5.9	445	6.4	703	5.6	370	6.2	46	6.2	26
37-38	15,486	21.8	9,054	20.4	1,659	24.0	3,042	24.2	1,517	25.5	149	20.0	65
39	23,165	32.7	14,449	32.5	2,151	31.1	4,144	33.0	2,049	34.5	263	35.3	109
40	18,462	26.0	12,066	27.1	1,660	24.0	3,096	24.6	1,384	23.3	185	24.8	71
41	7,465	10.5	5,021	11.3	715	10.3	1,150	9.1	468	7.9	82	11.0	29
42	367	0.5	244	0.5	38	0.5	59	0.5	21	0.4	3	--[4]	2
43	7	0.0	6	0.0	1	--[4]	0	0.0	0	0.0	0	0.0	0
44+	1	--[4]	0	0.0	1	--[4]	0	0.0	0	0.0	0	0.0	0
Preterm[5] (<37)	**5,992**	**8.4**	**3,614**	**8.1**	**696**	**10.1**	**1,078**	**8.6**	**506**	**8.5**	**63**	**8.5**	**35**
Very Early[6] (<28)	434	0.6	213	0.5	78	1.1	100	0.8	34	0.6	4	--[4]	5
(28-33)	1,352	1.9	785	1.8	173	2.5	275	2.2	102	1.7	13	1.7	4
Late (34-36)	4,206	5.9	2,616	5.9	445	6.4	703	5.6	370	6.2	46	6.2	26
Term (>=37)	**64,953**	**91.6**	**40,840**	**91.9**	**6,225**	**89.9**	**11,491**	**91.4**	**5,439**	**91.5**	**682**	**91.5**	**276**
Early Term (37-38)	15,486	21.8	9,054	20.4	1,659	24.0	3,042	24.2	1,517	25.5	149	20.0	65
(39-41)	49,092	69.2	31,536	70.9	4,526	65.4	8,390	66.8	3,901	65.6	530	71.1	209
(>=42)	375	0.5	250	0.6	40	0.6	59	0.5	21	0.4	3	--[4]	2
Unknown[7]	2,224		1,519		78		208		77		43		299

NOTE: Percentages are calculated based on births with known gestational age only.

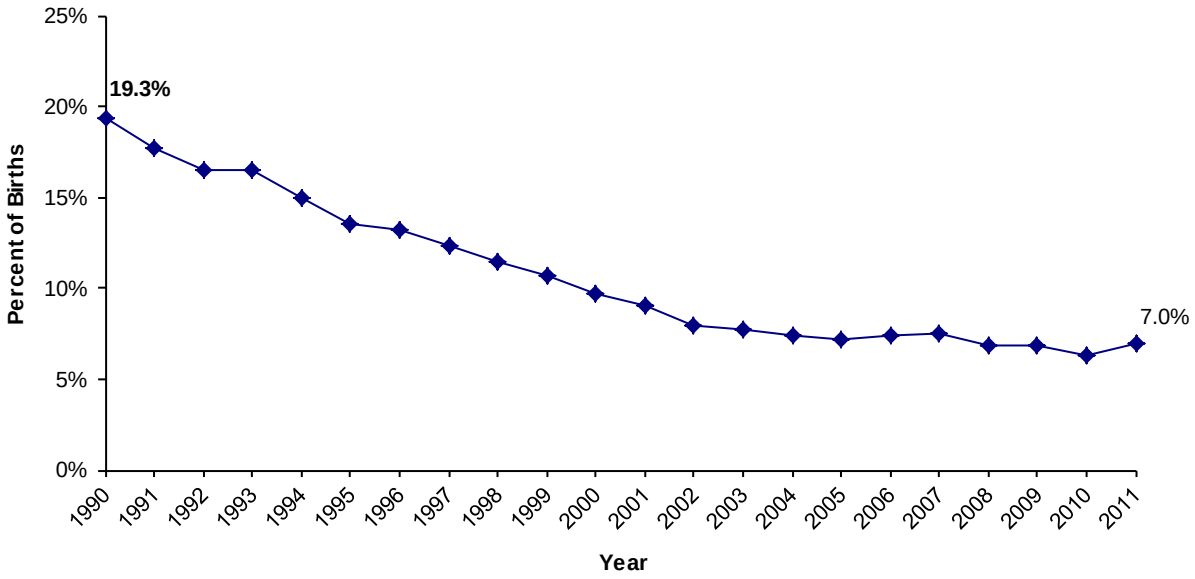
1. A clinical estimate of the number of weeks of pregnancy completed; as estimated by the attendant at birth or the postnatal physician. 2. Percentages are based on column total. 3. Other races include American Indian and others not specified. 4. Calculations based on values of 1-4 are excluded. 5. Also known as early gestational age, premature delivery, or preterm delivery. 6. Also known as extremely premature delivery, or extremely preterm delivery. 7. Estimate of gestational age not provided and excluded from percentage calculations.

Table 10b. Percent Preterm and Term Births by Gestational Age Category, Massachusetts: 1999-2011

	Preterm[1]			Term[2]	
Year	very early preterm (<28 wks)	moderate preterm (28-33 wks)	late preterm (34-36 wks)	early term (37-38 wks)	full term (37+ wks)
1999	0.6	1.9	5.2	17.1	92.4
2000	0.6	2.0	5.7	18.7	91.7
2001	0.6	1.9	5.5	18.8	92.0
2002	0.6	1.9	5.9	20.0	91.5
2003	0.7	2.1	6.0	20.8	91.3
2004	0.6	2.2	6.4	22.3	90.8
2005	0.6	2.1	6.3	22.3	91.0
2006	0.6	2.0	6.3	22.7	91.0
2007	0.6	2.0	6.4	22.6	91.0
2008	0.6	2.0	6.2	22.6	91.2
2009	0.7	1.9	6.2	20.8	91.3
2010	0.6	2.0	6.0	21.1	91.4
2011	0.6	1.9	5.9	21.8	91.6

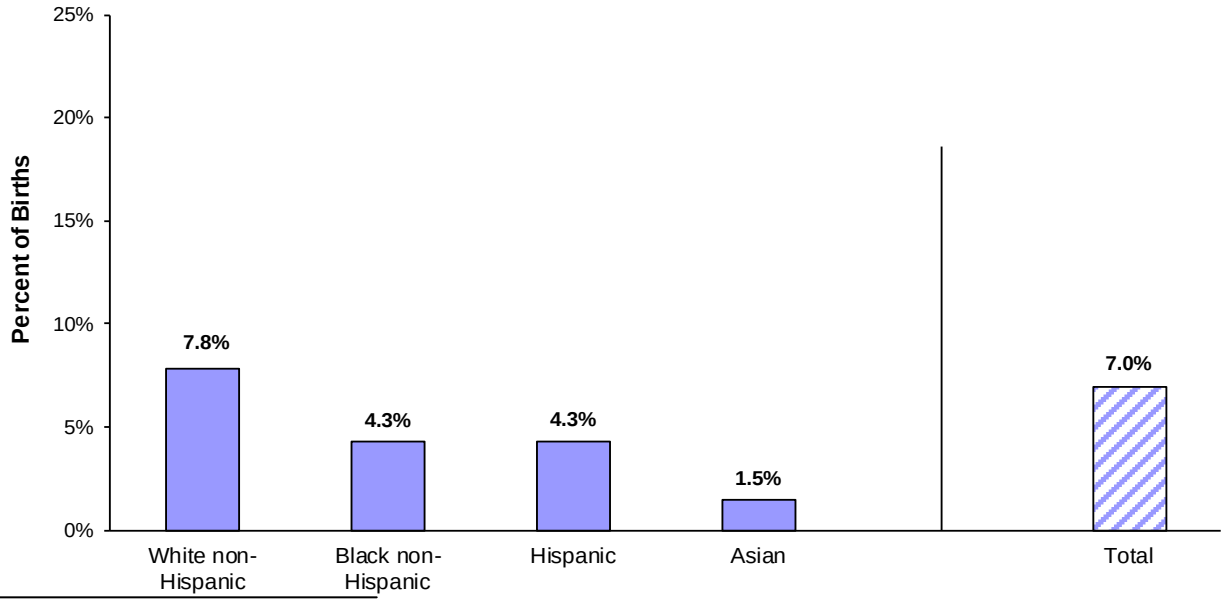
1. Also known as early gestational age, premature delivery, or preterm delivery. Preterm: <37 weeks gestation. 2. Full term and early term are not mutually exclusive.

Figure 3. Percent of Mothers who Reported Smoking during Pregnancy, Massachusetts: 1990-2011



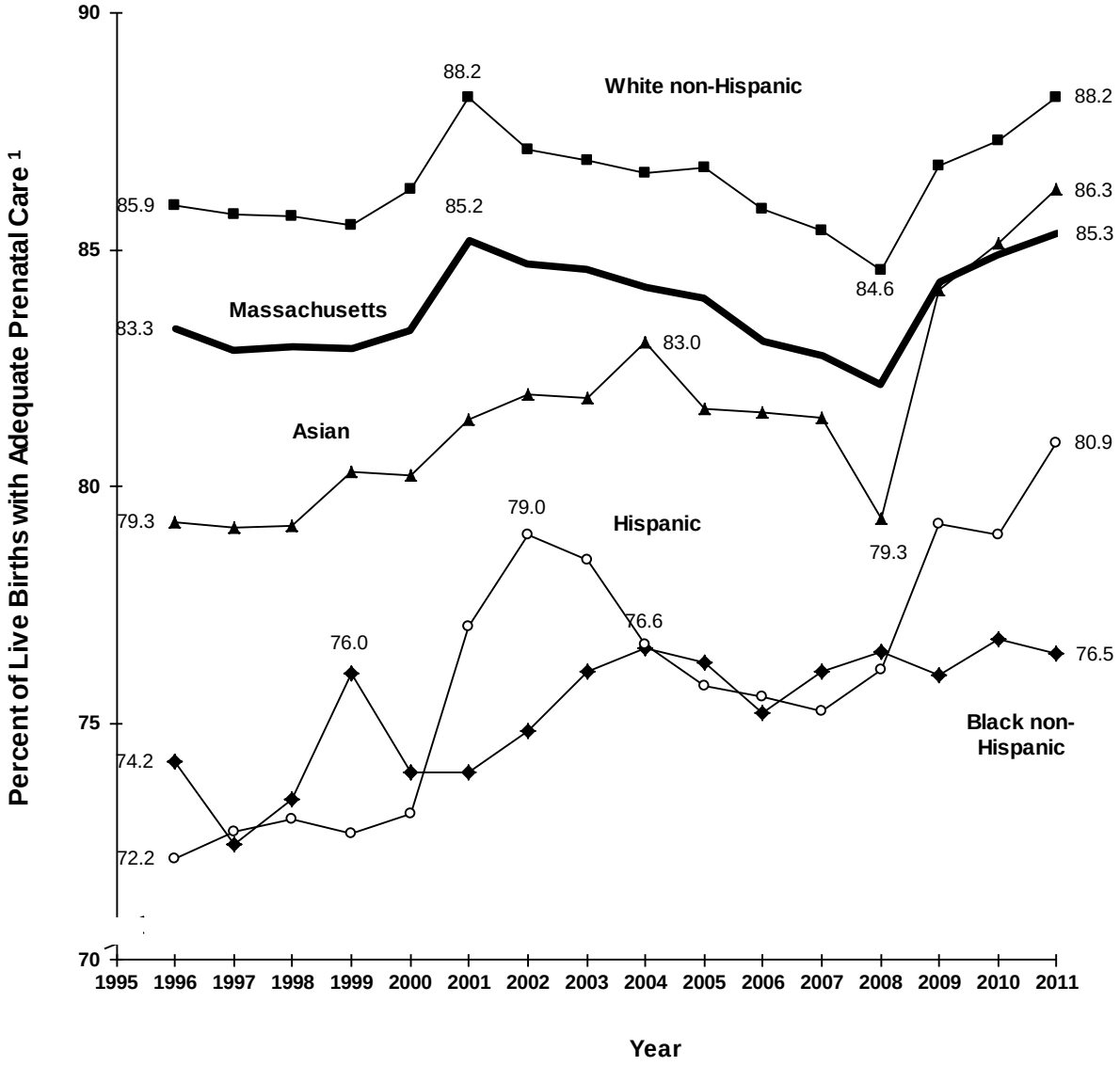
Note: Smoking information is provided on the birth certificate as reported by the mother. Due to self-reported nature, data on smoking prevalence should be interpreted cautiously.

Figure 4. Percent of Mothers who Reported Smoking during Pregnancy by Mother's Race/Hispanic Ethnicity, Massachusetts: 2011



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. Asian data should be interpreted with caution because of small numbers. Smoking information is provided on the birth certificate as reported by the mother. Due to self-reported nature, data on smoking prevalence should be interpreted cautiously.

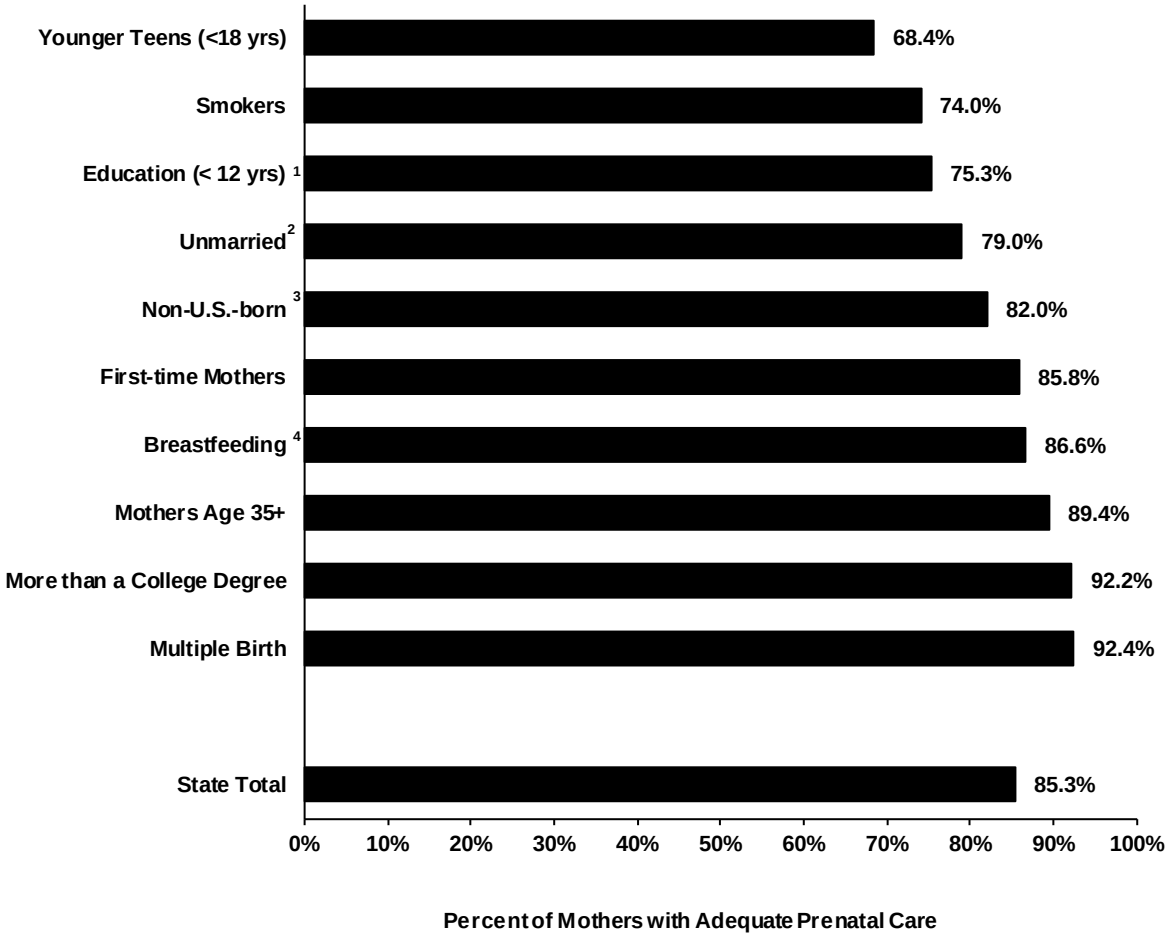
Figure 5. Trends in Adequacy of Prenatal Care by Race and Hispanic Ethnicity, Massachusetts: 1996-2011



PLEASE NOTE THAT FOR PURPOSES OF VISUAL REPRESENTATION THE VERTICAL SCALE OF GRAPH REPRESENTS A SMALL INTERVAL (from 70% to 90%).

1. All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
Please note that the Adequacy of Prenatal Care Utilization (APNCU) Index is an assessment of the timing and number of prenatal care visits and not an evaluation of the quality of care delivered. **Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.**

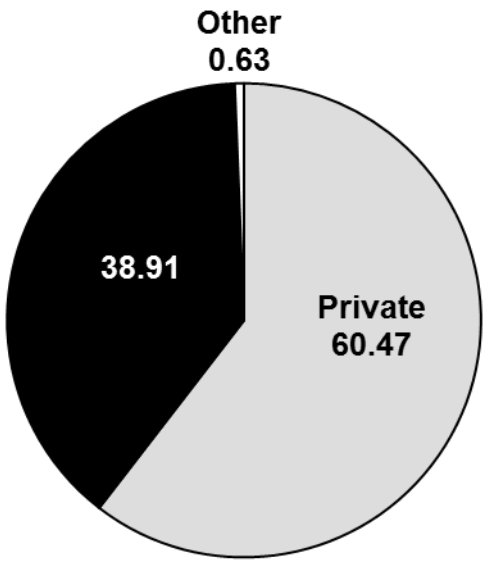
Figure 6. Adequacy of Prenatal Care by Selected Maternal Characteristics, Massachusetts: 2011



NOTE: All percentages are calculated based on the Adequacy of Prenatal Care Utilization (APNCU) Index. **Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems**. Characteristics of interest are not mutually exclusive, except as noted.

1. Women 20 years of age and older. 2. Marital status at time of birth. 3. Non-US-born includes women born outside of the 50 U.S. states, District of Columbia, and U.S. territories (Puerto Rico, U.S. Virgin Islands, Guam). 4. Infant was being breastfed at time of discharge.

Figure 7. Distribution of Prenatal Care Payment Source, Massachusetts: 2011



NOTE: Sources of Prenatal Care Payment include private: Commercial indemnity plan, commercial managed care (HMO, PPO, IPP, IPA, and other), or other private insurance; public: Government programs including CommonhHalth, Healthy Start, Medicaid/MassHealth, and Medicare (may also be HMO or managed care), or free care; and other: Self-Pay.

Table 11. Trends in Infant, Neonatal, and Post Neonatal Mortality by Race/Hispanic Ethnicity, Massachusetts: 1993-2011

INFANT MORTALITY (less than one year of age)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[2]	
Year	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]
1993	523	6.2	346	5.3	84	13.1	77	9.3	13	3.9	3	--[4]
1994	499	6.0	343	5.3	79	12.6	64	7.6	8	2.4	5	5.3
1995	419	5.1	275	4.4	65	11.1	58	7.2	19	5.5	2	--[4]
1996	403	5.0	289	4.7	63	11.4	40	5.1	8	2.2	2	--[4]
1997	425	5.3	294	4.8	64	11.7	55	6.7	10	2.6	2	--[4]
1998	414	5.1	287	4.6	59	10.6	58	6.7	10	2.7	0	0.0
1999	418	5.2	285	4.7	72	12.3	49	5.5	8	1.9	4	--[4]
2000	377	4.6	232	3.8	74	12.8	48	5.2	19	4.1	4	--[4]
2001	407	5.0	245	4.1	71	12.1	69	7.3	15	3.1	7	4.1
2002	397	4.9	239	4.1	69	11.6	67	7.0	16	3.0	6	3.8
2003	383	4.8	235	4.1	75	12.7	55	5.6	14	2.7	4	--[4]
2004	376	4.8	210	3.8	70	11.5	75	7.6	15	2.7	6	3.5
2005	391	5.1	230	4.3	57	9.4	78	7.7	18	3.4	8	4.3
2006	369	4.8	221	4.2	72	11.1	62	5.8	10	1.8	3	--[4]
2007	380	4.9	206	3.9	66	10.2	81	7.4	18	3.1	4	--[4]
2008	382	5.0	194	3.7	78	11.7	86	7.9	16	2.7	8	5.1
2009	366	4.9	205	4.1	54	7.8	78	7.1	20	3.4	9	7.8
2010	319	4.4	163	3.4	56	8.2	65	6.1	25	4.3	7	6.5
2011	310	4.2	159	3.4	47	6.7	75	5.8	22	3.6	6	2.1

NEONATAL MORTALITY (birth to 27 days)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[2]	
Year	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]
1993	375	4.4	245	3.7	64	10.0	55	6.7	9	2.7	2	--[4]
1994	349	4.2	240	3.7	58	9.3	40	4.7	7	2.1	4	--[4]
1995	298	3.6	198	3.1	50	8.5	39	4.8	10	2.9	1	--[4]
1996	290	3.6	222	3.6	34	6.2	27	3.5	5	1.4	1	--[4]
1997	323	4.0	228	3.7	44	8.0	43	5.2	7	1.8	1	--[4]
1998	315	3.9	218	3.5	47	8.5	43	5.0	7	1.9	0	0.0
1999	332	4.1	226	3.7	58	9.9	39	4.4	5	1.2	4	--[4]
2000	288	3.5	177	2.9	57	9.9	37	4.0	14	3.0	3	--[4]
2001	308	3.8	190	3.2	56	9.5	49	5.2	10	2.1	3	--[4]
2002	299	3.7	185	3.2	49	8.2	50	5.2	13	2.4	2	--[4]
2003	285	3.6	179	3.1	56	9.5	38	3.9	10	1.9	2	--[4]
2004	291	3.7	167	3.0	51	8.4	57	5.8	12	2.2	4	--[4]
2005	282	3.7	168	3.1	40	6.6	57	5.8	11	2.1	5	2.7
2006	279	3.6	173	3.3	53	8.2	42	3.9	7	1.3	3	--[4]
2007	263	3.4	141	2.7	48	7.4	53	4.9	15	2.6	4	--[4]
2008	291	3.8	153	3.0	57	8.6	65	6.0	10	1.7	6	3.8
2009	276	3.7	162	3.2	36	5.2	54	4.9	17	2.9	7	6.0
2010	238	3.3	121	2.5	43	6.3	47	4.4	20	3.4	5	4.6
2011	230	3.1	112	2.4	33	4.7	60	4.7	19	3.1	5	1.7

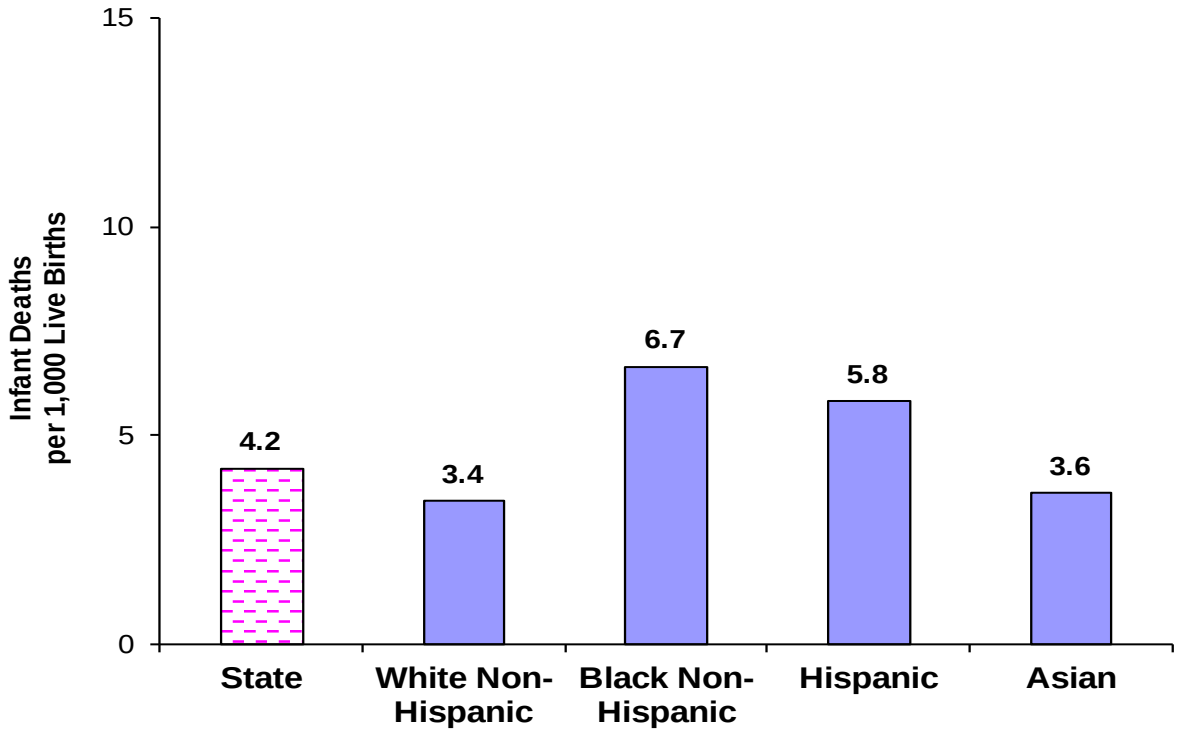
Table 11 (cont'd). Trends in Infant, Neonatal, and Post Neonatal Mortality by Race/Hispanic Ethnicity, Massachusetts: 1993-2011

POST NEONATAL MORTALITY (28-364 days)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[2]	
Year	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**
1993	148	1.7	101	1.5	20	3.1	22	2.7	4	--[4]	1	--[4]
1994	150	1.8	103	1.6	21	3.3	24	2.8	1	--[4]	1	--[4]
1995	121	1.5	77	1.2	15	2.6	19	2.3	9	2.6	1	--[4]
1996	113	1.4	67	1.1	29	5.3	13	1.7	3	--[4]	1	--[4]
1997	102	1.3	66	1.1	20	3.7	12	1.5	3	--[4]	1	--[4]
1998	99	1.2	69	1.1	12	2.2	15	1.7	3	--[4]	0	0.0
1999	86	1.1	59	1.0	14	2.4	10	1.1	3	--[4]	0	0.0
2000	89	1.1	55	0.9	17	2.9	11	1.2	5	1.1	1	--[4]
2001	99	1.2	55	0.9	15	2.6	20	2.1	5	1.0	4	--[4]
2002	98	1.2	54	0.9	20	3.4	17	1.8	3	--[4]	4	--[4]
2003	98	1.2	56	1.0	19	3.2	17	1.7	4	--[4]	2	--[4]
2004	85	1.1	43	0.8	19	3.1	18	1.8	3	--[4]	2	--[4]
2005	109	1.4	62	1.2	17	2.8	20	2.0	7	1.3	3	--[4]
2006	90	1.2	48	0.9	19	2.9	20	1.9	3	--[4]	0	0.0
2007	117	1.5	65	1.2	18	2.8	28	2.6	3	--[4]	3	--[4]
2008	91	1.2	41	0.8	21	3.2	21	1.9	6	1.0	2	--[4]
2009	90	1.2	43	0.9	18	2.6	24	2.2	3	--[4]	2	--[4]
2010	81	1.1	42	0.9	13	1.9	18	1.7	5	0.9	2	--[4]
2011	80	1.1	47	1.0	14	2.0	15	1.2	3	--[4]	1	--[4]

Note that infant deaths are based on the death file as December 19, 2013.
1. Deaths of infants of unknown race are included in the total calculation. For rate computations, births of infants of unknown race are allocated into the race categories according to the distribution of births of known race. 2. Other: American Indian and Other races. 3. Rates are expressed per 1,000 live births.
4. Calculations based on values of 1-4 are excluded.

Figure 8. Infant Mortality Rates by Race/Hispanic Ethnicity, Massachusetts: 2011



Note that infant deaths are based on the death file as December 9, 2013.
Rates are expressed per 1,000 live births (males and females).

Table 12. Resident Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2011

Municipality[1]	Rank (by pop. size)	Population	Crude Birth Rate[2]	Mother's Race and Ethnicity: White non-Hispanic %[3]	Black non-Hispanic %[3]	Hispanic %[3]	Asian or Other[4] %[3]	Birth weight: Very Low (<1500 g) %	Low (<2500 g) %	Gestational Diabetes %
STATE TOTAL		**6,587,536**	**11.1**	**62.8**	**9.6**	**17.5**	**9.3**	**1.3**	**7.6**	**5.1**
Arlington	30	42,839	13.3	70.2	4.2	5.5	19.9	--[5]	5.6	3.3
Attleboro	29	43,585	11.4	80.6	4.0	8.3	6.5	1.8	6.5	3.0
Barnstable	27	45,185	8.3	71.5	6.4	15.2	6.7	--[5]	7.5	2.1
Boston	1	617,594	13.1	39.7	27.2	23.6	9.0	1.7 H	9.2 H	4.0
Brockton	7	93,802	15.4	29.7	52.5	12.5	4.9	2.4 H	10.0 H	5.7
Brookline	18	58,730	11.7	64.7	2.5	6.0	25.7	1.2	9.0	3.8
Cambridge	5	105,157	12.4	55.7	13.4	9.0	21.1	1.2	6.5	3.2 L
Chicopee	22	55,295	11.5	66.7	5.3	24.7	3.3	1.7	10.2 H	7.1
Fall River	10	88,844	13.1	77.0	5.8	11.8	5.2	1.1	8.3	9.3 H
Framingham	14	68,314	13.2	45.2	5.5	36.5	12.4	1.6	8.1	5.2
Haverhill	15	60,876	13.2	68.2	2.9	25.2	3.0	--[5]	6.5	5.7
Lawrence	12	76,368	18.6	10.4	2.3	84.3	3.0	1.6	8.8	5.9
Lowell	4	106,517	15.8	40.5	8.3	21.6	29.2	1.0	7.6	7.3 H
Lynn	9	90,328	16.9	26.2	12.6	46.4	11.1	2.1 H	7.9	5.2
Malden	17	59,447	14.4	35.9	18.2	18.2	26.9	1.2	6.4	7.1 H
Medford	20	56,171	12.2	64.0	10.8	11.4	13.2	1.0	6.4	4.2
Methuen	26	47,252	12.3	62.0	2.9	28.7	5.9	1.2	7.1	4.2
New Bedford	6	95,071	13.8	55.5	12.3	28.3	3.5	2.0	10.4 H	6.5
Newton	11	85,142	9.2	73.1	3.0	7.5	15.8	0.8	6.3	3.4
Peabody	25	51,253	10.7	65.8	4.2	20.6	4.6	2.0	8.6	6.6
Pittsfield	28	44,728	11.8	81.6	5.9	7.6	4.9	0.9	7.8	4.0
Plymouth	19	56,455	9.0	89.0	3.1	4.5	2.9	--[5]	6.1	4.1
Quincy	8	92,275	13.8	50.9	8.4	6.0	34.3	1.4	7.5	7.4 H
Revere	24	51,744	14.9	44.2	5.4	38.8	10.6	0.8	6.7	6.3
Somerville	13	75,748	12.9	55.7	8.4	21.9	13.4	1.4	6.9	4.1
Springfield	3	153,057	15.6	25.1	18.8	51.5	4.4	2.1 H	8.3	6.9 H
Taunton	21	55,869	11.7	76.2	10.0	9.0	4.4	0.9	7.4	4.0
Waltham	16	60,621	14.0	49.6	7.3	23.6	19.4	0.7	8.0	4.1
Weymouth	23	53,736	12.4	80.2	8.3	4.7	6.3	1.1	6.9	6.3
Worcester	2	181,041	13.6	53.7	16.0	23.6	6.6	1.9 H	7.9	6.8 H

Table 12 (cont'd). Resident Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2011

Municipality[1]	Births					Deaths			
	Adequate Prenatal Care[6]	Public Payment[7] for Prenatal Care	Unmarried	Teen Mothers 15-19 years		Infant Mortality Rate[9]		Neonatal Mortality Rate[9]	
	%	%	%	n	Rate[8]	2011	2009-2011	2011	2009-2011
STATE TOTAL	**85.3**	**38.8**	**34.8**	**3,480**	**15.4**	**4.2**	**4.5**	**3.1**	**3.4**
Arlington	91.2	9.9 L	7.2 L	--[5]	--[5]	--[5]	3.3	--[5]	--[5]
Attleboro	74.5	33.3	28.8 L	24	17.9	--[5]	5.0	--[5]	3.8
Barnstable	81.2	57.7 H	40.0	16	12.5	--[5]	5.9	--[5]	--[5]
Boston	86.0 H	46.3 H	42.8 H	401	15.4	5.3	5.2	4.2	4.2
Brockton	76.3 L	64.8 H	53.7 H	121	36.1 H	6.9	6.9	5.5	4.8
Brookline	91.2 H	7.4 L	5.1 L	--[5]	--[5]	--[5]	--[5]	--[5]	--[5]
Cambridge	87.7	18.0 L	13.6 L	12	3.4 L	5.4	4.5	4.6	4.0
Chicopee	83.2	53.0 H	52.1	47	25.0 H	--[5]	5.3	--[5]	3.7
Fall River	84.3	73.1 H	59.7 H	115	41.4 H	--[5]	4.0	--[5]	3.4
Framingham	64.9[10]	46.7 H	32.3	31	13.2	--[5]	3.9	--[5]	2.5
Haverhill	83.1	44.2 H	44.4 H	56	31.3	--[5]	3.2	--[5]	2.0
Lawrence	77.0 L	78.9 H	69.8 H	163	48.0 H	4.9	6.2	4.2	4.0
Lowell	79.2	58.7 H	54.3 H	151	36.7 H	3.6	6.5	--[5]	4.7
Lynn	80.6	67.4 H	56.0 H	119	36.9 H	8.5	6.5	4.6	3.6
Malden	84.6	49.0 H	29.7 L	29	18.7	--[5]	2.9	--[5]	2.2
Medford	85.0	26.8 L	21.2 L	17	10.1	--[5]	2.4	--[5]	--[5]
Methuen	80.8	37.9	41.0 H	27	16.6	--[5]	--[5]	--[5]	--[5]
New Bedford	78.5 L	66.9 H	65.8 H	137	45.1 H	6.8	4.8	4.6	3.5
Newton	83.7[10]	9.1 L	8.8 L	6	1.4 L	--[5]	2.9	--[5]	2.5
Peabody	87.1	34.1	33.0	10	7.1	--[5]	4.6	--[5]	3.9
Pittsfield	74.0 L	56.5 H	56.5 H	45	33.6 H	--[5]	8.4	--[5]	6.4
Plymouth	92.0 H	31.9 L	29.8	17	10.4	--[5]	--[5]	--[5]	--[5]
Quincy	90.5 H	36.0	25.4 L	25	12.6	--[5]	3.7	--[5]	2.7
Revere	86.2	58.1 H	39.3	35	24.4 H	--[5]	2.2	--[5]	--[5]
Somerville	85.4	32.7 L	24.2	26	15.2	--[5]	3.8	--[5]	3.1
Springfield	74.9 L	74.2 H	70.9 H	367	53.7 H	7.9 H	7.7	5.0	4.5 H
Taunton	73.9 L	47.3 H	48.5 H	36	20.6	--[5]	4.8	--[5]	3.8
Waltham	76.6[10]	30.9 L	22.1 L	20	8.5 L	--[5]	2.0	--[5]	2.0
Weymouth	91.6 H	29.8 L	26.3 L	13	9.0	9.0	5.2	--[5]	3.1
Worcester	75.2[10]	58.8 H	50.7 H	193	25.0 H	6.1	6.4	4.9	5.0

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
H = percent or rate is higher than the state total
L = percent or rate is lower than the state total

1. The 30 largest municipalities are the cities/ owns in Massachusetts with the largest populations (See Technical Notes). 2. Crude birth rates represent the number of births per 1,000 residents (male and female). 3. For the category of Mother's Race and Ethnicity, percentages are calculated based on the state total of resident births, including births for which mother's race/Hispanic ethnicity is unknown. 4. Mothers who designated themselves as Asian, American Indian, or Other. 5. Counts and calculations based on 1-4 events are excluded. 6. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary for definition. For the states total, does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 7. Public payment sources include CommonHealth, Healthy Start, Medicaid/MassHealth, and Medicare (may be HMO or managed care), or free care. 8. Births per 1,000 female residents ages 15-19; rates for cities and towns were calculated using MDPH population estimates for 2010. 9. Deaths per 1,000 live births. See Definitions of Rates section in the Glossary for definitions of infant and neonatal mortality rates. 10. Percent should be interpreted with caution, because a large number of births (>10%) occurred at the facilities where reporting problems were noted.

Table 13. Birth Characteristics by Facility/Location, Massachusetts: 2011

Facility[1]	Location	(2) Occurrence Births (n)	(3) Low Birth weight (%)	(4) Public Pay for PNC (%)	(5) Adequate Prenatal Care (%)	Cesarean Deliveries (%)	(6) Early Term (%)	(7) Late preterm (%)
State Total		**73,497**	**7.5**	**38.5**	**85.3[8]**	**32.6**	**21.8**	**6.0**
Anna Jaques Hospital	Newburyport	591	3.0	35.5	88.0	34.0	20.8	3.6
Baystate Franklin Medical Center	Greenfield	489	3.7	49.1	86.7	22.1	15.3	4.5
Baystate Medical Center	Springfield	4,330	11.2	53.3	80.2	34.0	21.5	7.4
Berkshire Medical Center	Pittsfield	662	5.7	49.2	72.6	26.4	17.8	5.3
Beth Israel Deaconess Medical Center	Boston	4,752	10.5	21.1	97.3	36.0	23.6	8.4
Beverly Hospital	Beverly	2,077	5.0	35.2	87.8	33.9	21.9	5.2
Boston Medical Center	Boston	2,389	9.4	82.4	66.7	29.3	26.0	6.1
Brigham and Women's Hospital	Boston	7,861	10.2	27.3	95.0	32.2	23.0	7.0
Brockton Hospital	Brockton	975	7.5	66.0	78.5	39.3	24.0	8.3
Cambridge Birth Center	Cambridge	124	--[9]	12.9	70.2	--[9]	21.8	--[9]
Cambridge Hospital	Cambridge	1,179	2.6	73.4	80.5	25.9	24.3	0.8
Cape Cod Hospital	Barnstable	799	4.6	56.9	78.9	31.9	15.8	4.3
Caritas Good Samaritan Medical Center	Brockton	970	5.1	65.9	68.1	41.0	22.5	5.2
Caritas Holy Family Hospital and Medical Center	Methuen	912	3.5	42.7	84.0	43.2	21.3	4.3
Caritas Norwood Hospital	Norwood	501	2.6	29.6	55.3	33.7	21.4	4.2
Caritas St. Elizabeth's Medical Center	Boston	1,039	13.1	34.6	72.3	35.4	25.2	9.0
Charlton Memorial Hospital	Fall River	1,554	6.4	59.7	87.6	33.8	15.4	3.9
Cooley Dickinson Hospital	Northampton	814	2.6	31.7	90.4	31.0	15.4	2.5
Emerson Hospital	Concord	1,160	5.2	13.9	87.2	36.8	25.3	6.7
Fairview Hospital	Great Barrington	170	4.7	47.1	84.1	34.1	17.6	2.9
Falmouth Hospital	Falmouth	501	4.8	48.5	82.6	35.3	25.2	4.4
Harrington Memorial Hospital	Southbridge	307	5.2	35.5	86.3	31.6	19.9	3.3
Health Alliance Hospital	Leominster	1,027	3.7	52.2	85.0	22.2	19.2	3.9
Heywood Memorial Hospital	Gardner	420	1.9	47.4	73.6	16.7	23.1	2.9
Holyoke Hospital	Holyoke	461	4.6	60.9	72.4	22.8	17.6	2.0
Jordan Hospital	Plymouth	583	3.6	36.8	92.8	36.2	17.4	4.3
Lawrence General Hospital	Lawrence	1,670	6.6	69.6	78.3	32.3	24.1	4.7
Lowell General Hospital	Lowell	2,384	5.5	49.0	80.9	32.6	23.2	5.5
Martha's Vineyard Hospital	Oak Bluffs	138	--[9]	53.6	90.6	34.8	19.6	--[9]
Massachusetts General Hospital	Boston	3,692	10.2	29.2	88.1	31.0	20.5	6.6
Melrose-Wakefield Hospital	Melrose	1,088	3.2	33.8	90.8	37.6	20.6	3.5
Mercy Medical Center	Springfield	1,299	4.4	59.0	84.0	25.3	22.8	4.9
Metrowest Medical Center-Framingham	Framingham	951	6.8	53.4	55.2[10]	42.5	26.5	5.6
Milford Regional Medical Center	Milford	989	3.8	31.8	90.4	37.4	21.7	5.7
Morton Hospital	Taunton	456	5.7	45.8	69.8	41.3	27.5	8.4
Mount Auburn Hospital	Cambridge	2,298	3.6	18.2	89.4	21.7	16.1	3.6
Nantucket Cottage Hospital	Nantucket	97	--[9]	44.3	84.5	27.8	16.5	--[9]

Table 13. Birth Characteristics by Facility/Location, Massachusetts: 2011

Facility[1]	Location	(2) Occurrence Births (n)	(3) Low Birth weight (%)	(4) Public Pay for PNC (%)	(5) Adequate Prenatal Care (%)	Cesarean Deliveries (%)	(6) Early Term (%)	(7) Late preterm (%)
Newton Wellesley Hospital	Newton	4,109	5.2	6.3	66.0[10]	31.8	23.1	5.7
North Adams Regional Hospital	North Adams	273	5.1	56.3	90.5	28.2	23.1	2.9
North Shore Birth Center	Beverly	98	--[9]	16.3	98.0	--[9]	17.3	--[9]
North Shore Medical Center - Salem Hospital	Salem	1,550	5.8	55.3	82.0	31.9	22.1	6.3
Saint Vincent Hospital	Worcester	1,908	4.5	36.5	62.9[10]	31.4	20.2	5.2
South Shore Hospital	Weymouth	3,650	6.4	20.6	93.2	39.8	21.2	5.3
St. Luke's Hospital	New Bedford	1,401	8.4	58.7	77.8	36.0	27.4	6.8
Sturdy Memorial Hospital	Attleboro	826	3.3	32.9	75.9	34.1	16.6	3.8
Tobey Hospital	Wareham	471	3.4	44.4	81.5	20.6	17.6	3.2
Tufts Medical Center	Boston	1,128	28.5	45.4	89.4	41.0	22.3	16.0
UMass Memorial Medical Center - West Campus	Worcester	4,044	10.9	42.0	87.6	28.8	21.8	7.2
Winchester Hospital	Winchester	1,948	5.7	12.1	69.7[10]	36.3	21.3	5.5
Other Hospitals		6	--[9]	--[9]	--[9]	--[9]	--[9]	--[9]
Home, Enroute & Dr. Off.		376	9.1	26.0	66.8	--[9]	20.1	4.1

NOTE: All percentages are calculated based on only those occurrence births with known values for the characteristic(s) of interest.
As of 2011, Baystate Mary Lane Hospital is no longer a maternity facility

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth. 2. See Glossary for definition of occurrence births. 3. Less than 2,500 grams (5.5 lbs.) 4. Public payment for prenatal care (PNC) includes Medicaid/MassHealth, CommonHealth, Medicare, Healthy Start, other government programs, and free care. 5. Based on the APNCU Index. 6. Birth at 37 or 38 weeks of gestation. 7. Birth at 34 to 36 weeks of gestation. 8. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 9. Calculations based on 1-4 events are excluded. 10. Percent should be interpreted with caution, as this is a facility that was identified has having reporting problems for prenatal care.

Table 14. Comparison of Massachusetts Perinatal Health Indicators with Healthy People 2020 Objectives, Massachusetts: 2008-2011

Healthy People 2020 Objectives[1] (Focus Area: Maternal, Infant and Child Health MICH[2])	HP2020 Target	Massachusetts 2008	2009	2010	2011	Has Massachusetts achieved HP2020 target? ✓ = YES O = NO, but within 25% of target ● = NO, > 25% from target
Fetal, Infant, and Maternal Deaths						
MICH-1.1. Fetal Mortality Rate[3]	5.6	5.0	5.0	4.5	5.0	√
MICH-1.2. Perinatal Mortality Rate[4]	5.9	5.6	5.5	4.9	5.4	√
MICH-1.3. Infant Mortality Rate[5]	6.0	5.0	4.8	4.4	4.2	√
MICH-1.4. Neonatal Mortality Rate[6]	4.1	3.8	3.7	3.3	3.1	√
MICH-1.5. Postneonatal Mortality Rate[7]	2.0	1.2	1.2	1.1	1.1	√
MICH-5. Maternal Mortality Ratio[8]	11.4	10.3	4.0	5.5	9.5	√
Risk Factors						
MICH-8.1. Low Birthweight[9] (%)	7.8	7.8	7.8	7.8	7.6	√
MICH-8.2. Very Low Birthweight[10] (%)	1.4	1.3	1.4	1.3	1.3	√
MICH-9.1. Preterm[11] (%)	11.4	10.8	10.9	10.7	10.5	√
Prenatal Care						
MICH-10.1. Care beginning in first trimester (%)	77.9	81.0	82.6	83.9	83.0	√
MICH-10.2. Early and adequate care[12] (%)	77.6	82.1	84.3	84.9	85.3	√
Obstetrical Care						
MICH-33. Very Low Birthweight[10] Infants born at Level III Hospitals[13] (%)	82.5	76.2	81.1	82.5	82.4	**O**
MICH-7.1. Cesarean Sections: Low-Risk[14] Women Giving Birth for the First Time (%)	23.9	29.6	28.3	27.6	25.1	**O**
MICH-7.2. Cesarean Sections: Low-Risk[14] Women with Prior Cesarean Section (%)	81.7	91.1	90.4	89.7	89.0	**O**
Breastfeeding						
MICH-21.1. Breastfeeding[15] (%)	81.9	80.8	82.0	82.9	82.5	√
Prenatal Substance Exposure						
MICH-11.3. Abstinence from Smoking[15] (%)	98.6	93.1	93.2	93.7	93.0	**O**

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. National health promotion and disease prevention agenda established by the US Dept. of Health and Human Services. 2. Goal: to improve the health and well-being of women, infants, children, and families. 3. Number of fetal deaths per 1,000 fetal deaths plus live births. 4. Number of fetal and infant deaths in perinatal period (from 28 weeks gestation (inclusive) to 6 days (inclusive) after birth per 1,000 fetal deaths plus live births. 5. Number of infant deaths (under one year of age) per 1,000 live births. 6. Number of deaths to infants less than 28 days of age per 1,000 live births. 7. Number of deaths to infants 28-364 days of age per 1,000 live births. 8. See Definition of Rates section in Technical Notes. 9. Less than 2,500 grams, or 5.5 pounds. 10. Less than 1,500 grams, or 3.3 pounds. 11. Born before completion of 37th week of gestation. Note that beginning with this report, this indicator has been changed to reflect the NCHS method of calculating preterm using LMP. The values do not match previously published values as well as preterm values published elsewhere in this report. See entry for Gestational Age in the Glossary for further explanation. 12. Based on Adequacy of Prenatal Care Utilization Index (see Glossary). Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 13. Facilities for high-risk deliveries and neonates that can provide care to very small infants, including mechanical ventilation and neonatal surgery and special care for transferred patients and for which a full-time neonatologist serves as the director. 14. "Low-risk"= full term birth, singleton, vertex presentation. 15. HP2020 specifies objective as mother 'ever' breastfeeding. Massachusetts data is based on mother's self-report of whether infant was being breastfed at time of discharge, and of smoking during pregnancy.

Figure 9. Maternal Body Mass Index (BMI) prior to pregnancy, Massachusetts: 2011

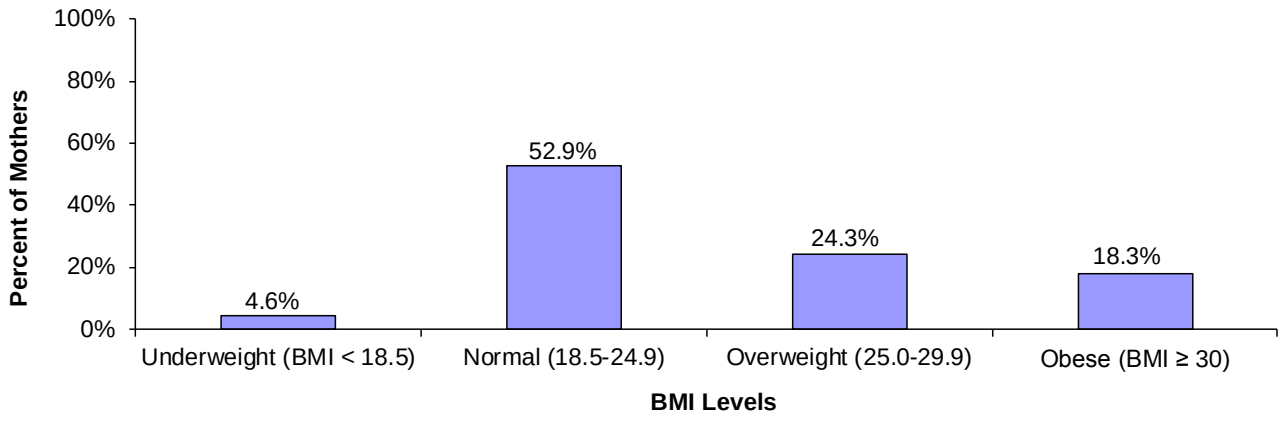
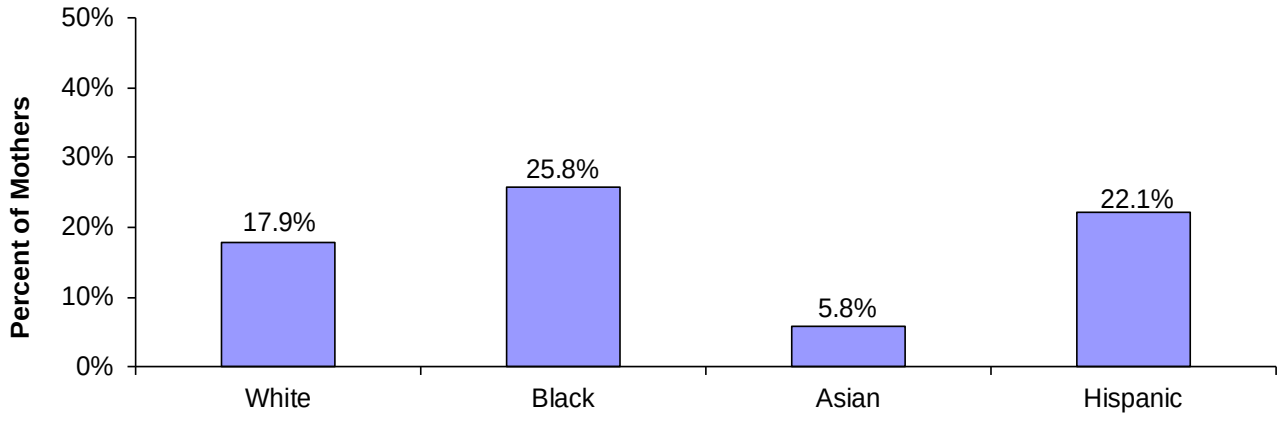


Figure 10. Obesity prior to pregnancy by race and Hispanic ethnicity, Massachusetts: 2011



Note: These figures are based on mothers in VIP and not births.

Figure 11. Mothers who Reported Having their Teeth Cleaned during Pregnancy by race and Hispanic ethnicity, Massachusetts: 2011

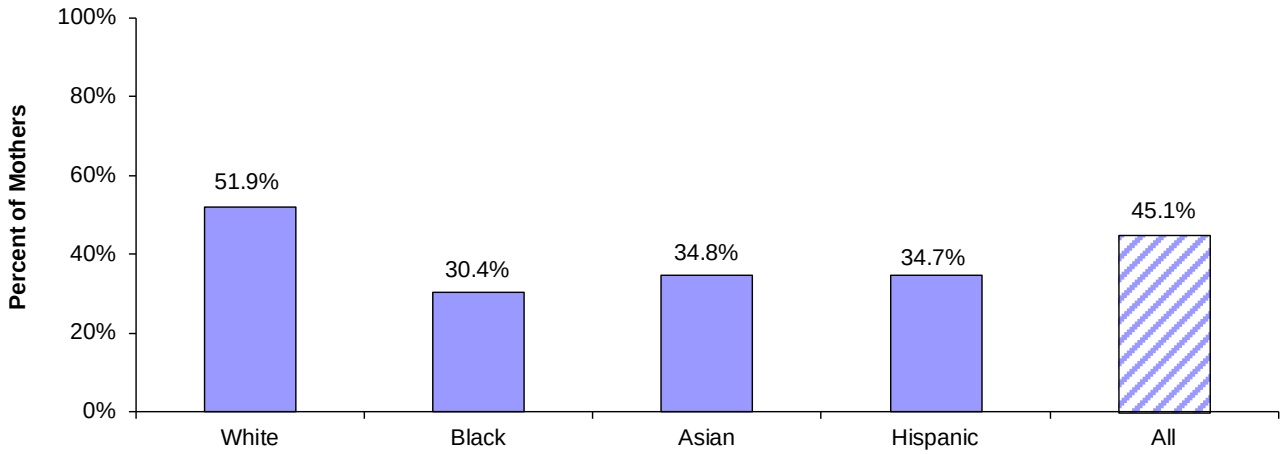
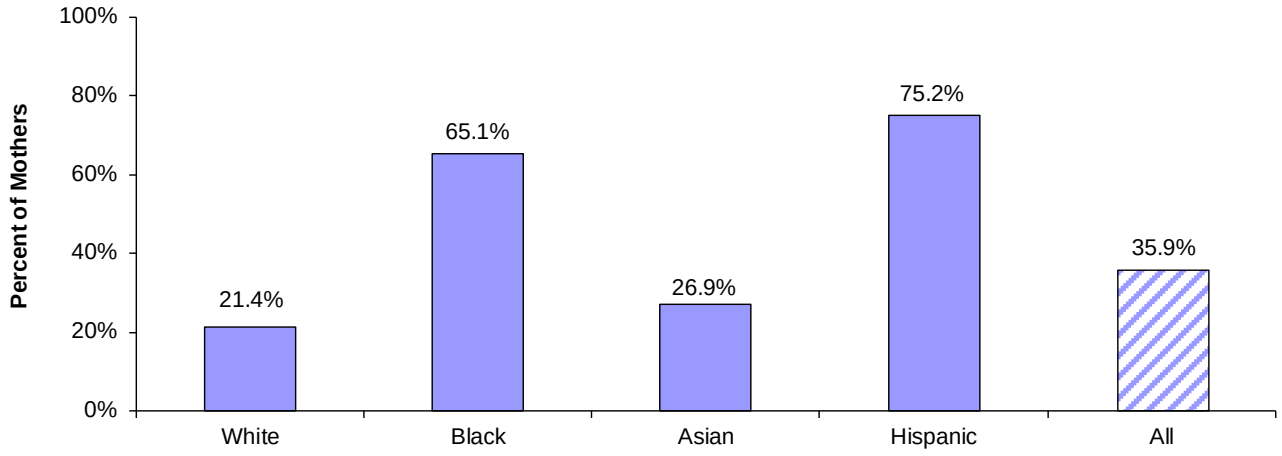


Figure 12. Mothers who Reported Having Received WIC food during Pregnancy by race and Hispanic ethnicity, Massachusetts: 2011



Note: These figures are based on mothers in VIP and not births

Table 15. Selected Birth Characteristics by Maternal Education, Massachusetts: 2011

	Less than High School		High School		Some College		Associate Degree		Bachelor's Degree		More than College	
	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]
State total	**7,693**	**11.1**	**15,184**	**21.9**	**9,527**	**13.8**	**5,036.0**	**7.3**	**17,606**	**25.4**	**14,152**	**20.5**
Race												
White non-Hispanic	2,111	5.2	7,945	18.1	5,658	12.9	3,503	8.0	13,713	31.2	11,004	25.0
Black non-Hispanic	998	16.8	2,085	31.7	1,437	21.8	641	9.7	999	15.2	425	6.5
Hispanic	3,942	34.7	4,166	34.8	1,840	15.4	585	4.9	941	7.9	481	4.0
Asian	534	9.5	786	13.4	444	7.6	242	4.1	1,775	30.3	2,086	35.6
Age (years)												
20-29	3,904	15.5	8,595	31.5	5,489	20.1	2,045	7.5	5,024	18.4	2,237	8.2
30-39	1,836	5.6	4,816	13.6	3,393	9.6	2,714	7.7	11,650	33.0	10,909	30.9
40+	203	6.4	453	14.3	305	9.6	266	8.4	930	29.4	1,006	31.8
Non-US-born[2]	3,475	45.2	4,772	31.4	2,183	22.9	1,216	24	4,179	23.7	3,709	26.2
Unmarried	5,637	73.5	9,064	60.0	4,869	51.5	1,515	30.0	1,889	10.8	588	4.2
Publicly financed prenatal care	6,526	87.3	10,113	68.4	4,774	52.0	1,534	32.5	2,095	12.3	552	4.0
Very low birthweight[3]	122	1.6	259	1.7	120	1.3	65	1.3	193	1.1	133	1.0
Low birthweight[4]	654	8.6	1,346	9.0	680	7.2	372	7.5	1,175	6.8	921	6.6
Adequate prenatal care[5]	5,126	74.2	10,494	81.2	6,664	83.3	3,568	87.7	12,331	90.2	10,282	92.2
Cesarean section delivery	2,030	26.9	4,753	31.9	3,010	32.5	1,681	35.0	5,803	34	4,621	33.2
Breastfeeding[6]	5,356	71.2	10,929	73.6	7,282	78.8	3,935	83.0	15,388	90	12,926	93.1
Multiple births	174	2.3	518	3.5	302	3.2	239	4.8	947	5.4	886	6.3
Smoking during pregnancy	1,093	14.5	2,033	13.6	994	10.6	256	5.2	191	1.1	55	0.4

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. For state total, race and age categories, percentages are based on row totals. For all other categories, percentages are based on state column totals. 2. Includes women born outside of the 50 US States, Washington D.C., and Puerto Rico/US territories (the US Virgin Islands, and Guam). 3. Very low birthweight: less than 1,500 grams or 3.3 pounds. 4. Low birthweight: less than 2,500 grams or 5.5 pounds. 5. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary for definition. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 6. Infant was being breastfed at time of discharge.

Table 16. Inter-pregnancy Interval (IPI) and Birth Outcomes -- Pregnancies to Multiparous Mothers, Massachusetts: 2011

	IPI[1] (months)	Pregnancies to Multiparous[2] Mothers	Birth Weight (BW)				Gestational Age (GA)			
			Low (<2,500 g)		Very Low (<1,500 g)		Preterm[3] (<37 wk)		Very Early[4] (<28 wk)	
			n	%LBW	n	%VLBW	n	%Preterm	n	%VEGA
	State Total	**34,545**	**1,949**	**5.6%**	**288**	**0.8%**	**2,434**	**7.1%**	**143**	**0.4%**
	<6	1,530	110	7.2%	23	1.5%	143	9.4%	16	1.0%
	6-11	3,600	175	4.9%	28	0.8%	244	6.8%	11	0.3%
	12-17	4,839	209	4.3%	21	0.4%	304	6.3%	17	0.4%
	18-23	4,381	179	4.1%	24	0.5%	254	5.8%	11	0.3%
	24-29	3,552	162	4.6%	15	0.4%	211	5.9%	9	0.3%
	30-35	2,879	143	5.0%	22	0.8%	171	5.9%	11	0.4%
	36-41	2,294	134	5.8%	17	0.7%	144	6.3%	9	0.4%
	42-47	1,771	99	5.6%	16	0.9%	130	7.4%	8	0.5%
	48+	9,699	738	7.6%	122	1.3%	833	8.6%	51	0.5%
Short	**0-11**	5,130	285	5.6%	51	1.0%	387	7.6%	27	0.5%
	12-35	15,651	693	4.4%	82	0.5%	940	6.0%	48	0.3%
	36+	13,764	971	7.1%	155	1.1%	1,107	8.0%	68	0.5%

1. Interpregnancy Interval (IPI) is the time in months between the date of last menstrual period of current pregnancy and the date of previous live birth. 2. Multiparous is defined as having given birth two or more times. 3. Also known as premature delivery. 4. Very early gestational age (VEGA) refers to birth before 28 weeks of gestational age and is also known as *extremely preterm* delivery.

Table 17. Resident Teen Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2011

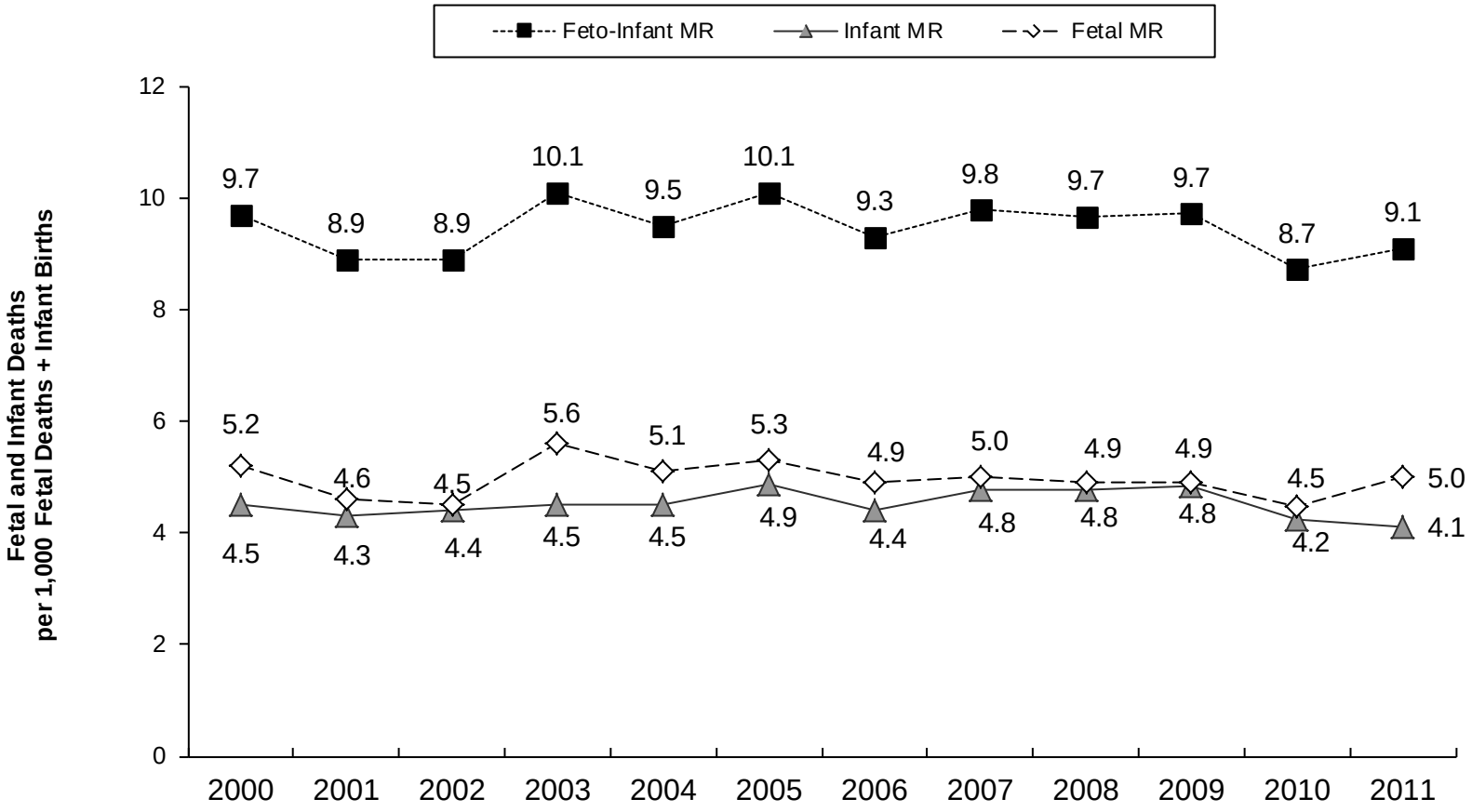
Municipality[1]	Total Population Rank	Female Population, ages 15-19	Number of Teen Births	Teen Birth Rate[2]	Mother's Race and Hispanic Ethnicity (% of teen births)			
					White non-Hispanic	Black non-Hispanic	Hispanic	Asian or other[3]
State Total		**226,538**	**3,480**	**15.4**	**41.2**	**12.8**	**41.9**	**4.1**
Arlington	30	867	--[4]	--[4]	--[4]	--[4]	--[4]	--[4]
Attleboro	29	1,344	24	17.9	54.2	--[4]	33.3	0.0
Barnstable	27	1,278	16	12.5	50.0	31.3	--[4]	0.0
Boston	1	25,988	399	15.4	8.5	40.4	48.1	3.0
Brockton	7	3,354	121	36.1	24.8	53.7	19.0	--[4]
Brookline	18	1,469	--[4]	--[4]	--[4]	--[4]	--[4]	--[4]
Cambridge	5	3,550	12	3.4	0.0	41.7	50.0	--[4]
Chicopee	22	1,881	47	25.0	38.3	--[4]	57.4	0.0
Fall River	10	2,781	115	41.4	70.4	7.8	16.5	5.2
Framingham	14	2,351	31	13.2	19.4	--[4]	74.2	0.0
Haverhill	15	1,791	56	31.3	41.1	--[4]	55.4	0.0
Lawrence	12	3,395	163	48.0	6.1	--[4]	90.8	--[4]
Lowell	4	4,118	150	36.4	30.0	--[4]	36.0	33.3
Lynn	9	3,223	113	35.1	18.6	7.1	65.5	8.8
Malden	17	1,548	29	18.7	44.8	--[4]	34.5	--[4]
Medford	20	1,683	17	10.1	58.8	--[4]	--[4]	--[4]
Methuen	26	1,624	27	16.6	40.7	--[4]	55.6	0.0
New Bedford	6	3,037	136	44.8	42.6	14.7	40.4	--[4]
Newton	11	4,195	6	1.4	--[4]	0.0	--[4]	0.0
Peabody	25	1,405	10	7.1	50.0	0.0	50.0	0.0
Pittsfield	28	1,339	45	33.6	80.0	--[4]	13.3	--[4]
Plymouth	19	1,641	17	10.4	88.2	11.8	0.0	0.0
Quincy	8	1,984	24	12.1	45.8	25.0	25.0	--[4]
Revere	24	1,434	35	24.4	28.6	0.0	62.9	--[4]
Somerville	13	1,711	26	15.2	26.9	15.4	50.0	--[4]
Springfield	3	6,836	366	53.5	9.8	16.9	72.1	--[4]
Taunton	21	1,744	36	20.6	61.1	16.7	13.9	--[4]
Waltham	16	2,356	20	8.5	30.0	15.0	55.0	0.0
Weymouth	23	1,444	13	9.0	76.9	--[4]	0.0	--[4]
Worcester	2	7,726	193	25.0	52.8	4.7	38.3	4.1

Table 17 (cont'd). Resident Teen Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2011

Municipality	Public Payment for Prenatal Care[5] (%)	Unmarried (%)	Low Birthweight[6] (%)	Preterm[7] (%)	Adequacy of Prenatal Care[8]			
					Adequate Intensive	Adequate Basic	Intermediate	Inadequate[9]
State Total	**77.7**	**94.7**	**8.9**	**9.1**	**34.5**	**38.9**	**8.5**	**18.0**
Arlington	0.0	--[4]	0.0	0.0	0.0	--[4]	0.0	0.0
Attleboro	68.2	95.7	--[4]	--[4]	22.7	31.8	--[4]	31.8
Barnstable	87.5	87.5	37.5	--[4]	--[4]	33.3	--[4]	--[4]
Boston	83.3	95.0	12.8	11.1	26.0	51.8	7.9	14.3
Brockton	78.3	96.7	9.1	13.3	33.3	34.2	8.3	24.2
Brookline	--[4]	--[4]	0.0	0.0	0.0	--[4]	0.0	0.0
Cambridge	75	91.7	0.0	0.0	--[4]	41.7	--[4]	--[4]
Chicopee	74.5	91.5	10.6	--[4]	31.8	45.5	--[4]	13.6
Fall River	88.1	95.4	7.8	5.5	65.1	11.0	--[4]	20.2
Framingham	72.4	100.0	--[4]	--[4]	20.0[10]	40.0[10]	23.3[10]	16.7[10]
Haverhill	78.6	92.9	8.9	--[4]	23.2	51.8	12.5	12.5
Lawrence	89.5	93.3	11.0	11.0	22.4	45.3	14.9	17.4
Lowell	78.7	97.3	7.3	8.0	36.2	33.6	6.7	23.5
Lynn	85.4	94.1	12.6	13.7	40.0	32.9	9.4	17.6
Malden	81.5	93.1	--[4]	24.1	67.9	17.9	--[4]	--[4]
Medford	70.6	88.2	0.0	0.0	52.9	--[4]	0.0	--[4]
Methuen	66.7	88.9	--[4]	--[4]	18.5	48.1	22.2	--[4]
New Bedford	74.1	98.5	6.6	6.7	36.1	37.6	9.8	16.5
Newton	--[4]	100.0	0.0	0.0	--[4]	--[4]	0.0	--[4]
Peabody	--[4]	100.0	--[4]	--[4]	--[4]	--[4]	0.0	0.0
Pittsfield	73.3	100.0	8.9	--[4]	22.2	42.2	11.1	24.4
Plymouth	82.4	88.2	--[4]	--[4]	41.2	47.1	0.0	--[4]
Quincy	84	92.0	--[4]	--[4]	24.0	56.0	--[4]	--[4]
Revere	77.1	91.4	0.0	--[4]	34.3	45.7	--[4]	17.1
Somerville	84.6	96.2	--[4]	--[4]	34.6	23.1	--[4]	30.8
Springfield	87.4	98.1	10.4	11.4	35.9	35.1	10.0	18.9
Taunton	73.5	100.0	--[4]	--[4]	20.6	41.2	14.7	23.5
Waltham	85	100.0	--[4]	--[4]	30.0[10]	30.0[10]	--[4]	35.0[10]
Weymouth	53.8	92.3	0.0	--[4]	38.5	38.5	0.0	--[4]
Worcester	86.5	94.3	5.7	7.3	23.7[10]	45.0[10]	11.5[10]	19.8[10]

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. The 30 largest municipalities are the cities and towns in Massachusetts with the largest populations according to the 2010 Census. 2. Birth rates represent the number of births per 1,000 females ages 15-19. Birth rates for cities and towns were calculated using MDPH population estimates for 2010. 3. Mothers who designated themselves as Asian, American Indian, or Other. 4. Counts and calculations based on values of 1-4 are excluded. 5. See Glossary under "Prenatal Care Payment Source." 6. Less than 2,500 grams or 5.5 pounds. 7. Less than 37 weeks of gestational age. 8. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary and Technical Notes in the Appendix for definitions of index and adequacy categories. **State total does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems**. 9. Inadequate includes those mothers with no prenatal care. 10. Percent should be interpreted with caution, because a large number of births (>10%) occurred at the facilities where reporting problems were noted.

Figure 13. Feto-Infant Mortality Rate, Massachusetts: 2000-2011



NOTES: In this graph, Infant, Fetal, and Feto-Infant Mortality Rates include all deaths (including those with unknown birthweight). The Infant Mortality Rate in this graph includes fetal deaths in the denominator unlike the conventional IMR. The Infant Mortality Rate and Fetal Mortality Rate may not add up to the Feto-Infant Mortality Rate due to rounding.

Source: Starting with *Massachusetts Births 2003*, linked death-cohort files of MA resident infant deaths for the years 2000-2011 have been used for the calculation of infant mortality.

Table 18. Fetal and Infant Deaths by Birthweight and Gestational Age, Massachusetts: 1998-2011

Year	Fetals <24 wks or <500 grams	Fetals ≥ 24 wks and ≥ 500 grams	Infants <24 wks or <500 grams	Infants ≥ 24 wks and ≥ 500 grams	Total
1998	216 (25.5%)	219 (25.8%)	183 (21.6%)	230 (27.1%)	848 (100.0%)
1999	214 (25.4%)	215 (25.6%)	196 (23.3%)	216 (25.7%)	841 (100.0%)
2000	203 (25.1%)	234 (28.9%)	168 (20.7%)	205 (25.3%)	810 (100.0%)
2001	174 (22.0%)	214 (27.1%)	197 (24.9%)	206 (26.0%)	791 (100.0%)
2002	165 (22.3%)	210 (28.3%)	185 (25.0%)	181 (24.4%)	741 (100.0%)
2003	218 (26.3%)	246 (29.6%)	189 (22.8%)	177 (21.3%)	830 (100.0%)
2004	177 (22.7%)	240 (30.8%)	182 (23.3%)	181 (23.2%)	780 (100.0%)
2005	210 (26.3%)	213 (26.7%)	174 (21.8%)	201 (25.2%)	798 (100.0%)
2006	178 (24.1%)	210 (28.5%)	173 (23.4%)	177 (24.0%)	738 (100.0%)
2007	184 (23.7%)	215 (27.7%)	149 (19.2%)	227 (29.3%)	775 (100.0%)
2008	178 (23.5%)	209 (27.5%)	194 (25.6%)	178 (23.5%)	759 (100.0%)
2009	158 (21.3%)	221 (29.8%)	162 (21.8%)	201 (27.1%)	742 (100.0%)
2010	150 (23.1%)	180 (27.7%)	153 (23.6%)	166 (25.6%)	649 (100.0%)
2011	147 (21.7%)	223 (32.9%)	133 (19.6%)	174 (25.7%)	677 (100.0%)

Source: Starting with *Massachusetts Births 2003*, linked death-cohort files of MA resident infant deaths for the years 1998-2011 have been used for the calculation of infant mortality.

Table 19. Adequacy of Prenatal Care Utilization: Summary and Component Indices, Massachusetts: 2011

	Adequate Total[1]		Adequate Intensive[2]		Adequate Basic[2]		Intermediate[2]		Inadequate[2]		Unknown[2]
	n	%	n	%	n	%	n	%	n	%	n
Summary Index[3]											
Adequacy of Prenatal Care Utilization	50,756	85.3	24,813	41.7	25,943	43.6	3,445	5.8	5,279	8.9	4,909
Component Indices[3]											
Adequacy of Initiation	54,510	91.6	23,836	40.1	30,674	51.6	2,997	5.0	1,973	3.3	4,909
Adequacy of Received Services (Visits)	55,050	92.6	28,204	47.4	26,846	45.1	3,827	6.4	603	1.0	4,909

NOTE: All percentages are calculated based on the Adequacy of Prenatal Care Utilization (APNCU) Index**. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.**

1. Adequate Total is the sum of Adequate Intensive and Adequate Basic categories. 2. For definitions of these categories, please see the Technical Notes in the Appendix. 3. For an explanation of the APNCU Index (summary index) and its component indices, please see Technical Notes in the Appendix.

Table 20. Birth Characteristics by Race/Hispanic Ethnicity and Source of Prenatal Care Payment, Massachusetts: 2011

Race/Ethnicity and Payment Source	Births[1]		Teen Births				Birthweight			
			<18 Years		<20 Years		Very Low[2]		Low[3]	
	n	%	n	%	n	%	n	%	n	%
STATE TOTAL[4]	**73,169**	**100.0**	**1,025**	**1.4**	**3,515**	**4.8**	**956**	**1.3**	**5,458**	**7.6**
Public	27,398	38.7	786	2.9	2,653	9.7	363	1.3	2,232	8.1
Medicaid[5]	22,012	31.1	636	2.9	2,198	10.0	293	1.3	1,837	8.3
Other Public[6]	5,386	7.6	150	2.8	455	8.4	70	1.3	395	7.3
Private[7]	42,581	60.1	195	0.5	721	1.7	495	1.2	2,944	6.9
White non-Hispanic	**45,973**	**100.0**	**343**	**0.7**	**1,436**	**3.1**	**507**	**1.1**	**3,130**	**6.8**
Public	11,392	25.7	214	1.9	942	8.3	118	1.0	871	7.6
Medicaid[5]	9,085	20.5	185	2.0	795	8.8	89	1.0	700	7.7
Other Public[6]	2,307	5.2	29	1.3	147	6.4	29	1.3	171	7.4
Private[7]	32,484	73.1	112	0.3	434	1.3	328	1.0	2,080	6.4
Black non-Hispanic	**6,999**	**100.0**	**117**	**1.7**	**448**	**6.4**	**155**	**2.2**	**707**	**10.1**
Public	4,504	65.0	99	2.2	357	7.9	90	2.0	434	9.6
Medicaid[5]	3,512	50.7	80	2.3	299	8.5	72	2.1	359	10.2
Other Public[6]	992	14.3	19	1.9	58	5.8	18	1.8	75	7.6
Private[7]	2,333	33.7	14	0.6	82	3.5	54	2.3	241	10.3
Hispanic	**12,777**	**100.0**	**513**	**4.0**	**1,467**	**11.5**	**197**	**1.5**	**1,021**	**8.0**
Public	9,391	75.0	435	4.6	1,236	13.2	132	1.4	753	8.0
Medicaid[5]	7,626	60.9	337	4.4	996	13.1	110	1.4	623	8.2
Other Public[6]	1,765	14.1	98	5.6	240	13.6	22	1.2	130	7.4
Private[7]	3,000	24.0	60	2.0	175	5.8	51	1.7	229	7.6
Asian	**6,022**	**100.0**	**36**	**0.6**	**108**	**1.8**	**67**	**1.1**	**490**	**8.1**
Public	1,625	27.3	28	1.7	84	5.2	18	1.1	133	8.2
Medicaid[5]	1,417	23.8	27	1.9	80	5.6	17	1.2	121	8.5
Other Public[6]	208	3.5	1	--[8]	4	--[8]	1	--[8]		5.8
Private[7]	4,256	71.6	7	0.2	22	0.5	48	1.1	349	8.2
Other[9]	**788**	**100.0**	**9**	**1.1**	**33**	**4.2**	**17**	**2.2**	**72**	**9.1**
Public	392	52.3	6	1.5	25	6.4	3	--[8]	36	9.2
Medicaid[5]	317	42.3	5	1.6	22	6.9	3	--[8]	31	9.8
Other Public[6]	75	10.0	1	--[8]	3	--[8]	0	0.0	5	6.7
Private[7]	345	46.0	2	--[8]	6	1.7	8	2.3	24	7.0

Table 20 (cont'd). Birth Characteristics by Race/Hispanic Ethnicity and Source of Prenatal Care Payment, Massachusetts: 2011

Race/Ethnicity by PNC Payment Source	Prenatal Care: Adequate[10] n	Adequate[10] %	Began 1st Trimester n	Began 1st Trimester %	Cesarean Delivery n	Cesarean Delivery %	Breastfeeding[11] n	Breastfeeding[11] %	Smoking[12] n	Smoking[12] %
STATE TOTAL[4]	**50,756**	**85.3**	**57,900**	**83.0**	**23,062**	**32.5**	**58,432**	**82.5**	**5,015**	**7.0**
Public	19,271	78.5	20,075	74.4	8,329	30.4	20,621	75.5	3,682	13.7
Medicaid[5]	15,727	78.9	16,259	74.8	6,778	30.8	16,332	74.4	3,087	14.3
Other Public[6]	3,544	76.5	3,816	72.9	1,551	28.8	4,289	79.9	595	11.2
Private[7]	31,213	91.0	37,518	89.5	14,389	33.9	37,008	87.5	1,121	2.7
White non-Hispanic	**32,074**	**88.2**	**37,730**	**86.1**	**14,683**	**33.0**	**35,899**	**80.9**	**3,884**	**8.6**
Public	8,063	80.6	8,568	76.4	3,444	30.2	7,617	67.0	2,724	24.3
Medicaid[5]	6,542	80.4	6,834	76.1	2,735	30.1	5,921	65.3	2,302	25.7
Other Public[6]	1,521	81.3	1,734	77.6	709	30.7	1,696	73.8	422	18.5
Private[7]	23,817	91.8	28,951	90.4	11,025	34.1	27,814	86.2	1,001	3.1
Black non-Hispanic	**4,869**	**76.5**	**4,974**	**72.8**	**2,315**	**33.4**	**5,859**	**84.8**	**341**	**4.9**
Public	3,016	72.0	3,006	67.7	1,437	31.9	3,677	81.9	285	6.4
Medicaid[5]	2,438	74.4	2,430	70.2	1,139	32.5	2,831	80.9	230	6.6
Other Public[6]	578	63.6	576	59.1	298	30.0	846	85.7	55	5.6
Private[7]	1,842	87.4	1,952	84.6	843	36.2	2,101	90.5	38	1.6
Hispanic	**8,984**	**80.9**	**9,614**	**77.9**	**3,941**	**31.3**	**10,497**	**83.7**	**614**	**4.9**
Public	6,657	78.9	7,007	75.6	2,867	30.5	7,688	82.2	536	5.8
Medicaid[5]	5,404	79.0	5,711	75.8	2,407	31.6	6,210	81.8	435	5.8
Other Public[6]	1,253	78.4	1,296	74.8	460	26.1	1,478	84.0	101	5.8
Private[7]	2,278	89.2	2,550	86.4	1,028	34.3	2,675	89.6	50	1.7
Asian	**4,201**	**86.3**	**4,898**	**83.4**	**1,783**	**30.0**	**5,317**	**89.5**	**93**	**1.6**
Public	1,209	80.3	1,179	73.6	432	26.6	1,261	77.8	69	4.4
Medicaid[5]	1,079	81.0	1,030	73.7	378	26.7	1,082	76.6	64	4.7
Other Public[6]	130	74.7	149	73.4	54	26.0	179	86.1	5	2.4
Private[7]	2,977	89.4	3,699	87.9	1,328	31.3	3,994	94.2	21	0.5
Other[9]	**504**	**78.6**	**556**	**76.6**	**253**	**33.9**	**609**	**81.6**	**75**	**9.7**
Public	278	77.7	276	72.1	129	32.9	301	76.8	62	16.0
Medicaid[5]	225	77.3	221	71.3	106	33.4	240	75.7	51	16.3
Other Public[6]	53	79.1	55	75.3	23	30.7	61	81.3	11	14.7
Private[7]	226	83.1	279	84.8	115	34.1	294	87.5	10	2.9

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. In the "Births" column, percentages are based on race/ethnicity category totals (in column). For all other characteristics, percentages are based on the total number of births for the race/ethnicity by payment source for the row. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low Birthweight: less than 2,500 grams or 5.5 pounds. 4. Total births do not equal Public + Private because Workers' Compensation, self-paid, and other are in the state total but not shown in the table. 5. Medicaid/MassHealth. 6. Other Public: CommonHealth, Healthy Start, Medicare, other government programs, and free care. 7. Private: commercial indemnity plans or commercial managed care organizations (HMO, PPO, IPP, or IPA). It does not include Self-Paid/Other. 8. Calculations based on values of 1-4 are excluded. 9. Other: Mothers who designated their race as American Indian or "Other." 10. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. **Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.**
11. Infant was being breastfed at time of discharge. 12. Mother reported smoking during pregnancy.

Table 21. Cesarean Deliveries and Vaginal Births after Cesarean (VBACs) by Licensed Maternity Facility, All Births, Massachusetts: 2011

Facility[1]	Occurrence Births[2]	Total Cesareans		Primary Cesareans[2]		Repeat Cesareans[2]		VBACs[2]	
		N	%[3,4]	N	%[3,5]	N	%[3,6]	N	%[7]
State Total	**73,497**	**23,554**	**32.6**	**13,529**	**22.1**	**10,025**	**90.6**	**1,038**	**9.4**
Anna Jaques Hospital	591	201	34.0	127	25.3	74	82.2	16	17.8
Baystate Franklin Medical Center	489	108	22.1	73	16.4	35	79.5	9	20.5
Baystate Medical Center	4,330	1,472	34.0	848	23.5	624	86.0	102	14.0
Berkshire Medical Center	662	175	26.4	103	17.9	72	84.7	13	15.3
Beth Israel Deaconess Medical Center	4,752	1,711	36.0	1,007	25.5	704	87.8	98	12.2
Beverly Hospital	2,077	358	33.9	215	23.9	143	91.7	13	8.3
Boston Medical Center	2,389	700	29.3	449	21.2	251	94.4	15	5.6
Brigham and Women's Hospital	7,861	2,523	32.2	1,594	23.3	929	93.7	62	6.3
Brockton Hospital	975	383	39.3	200	25.7	183	92.4	15	7.6
Cambridge Hospital	1,179	305	25.9	158	15.8	147	83.5	29	16.5
Cape Cod Hospital	799	255	31.9	140	20.7	115	92.7	9	7.3
Caritas Good Samaritan Medical Center	970	398	41.0	231	28.8	167	98.8	2	--[8]
Caritas Holy Family Hospital and Medical Center	912	394	43.2	216	29.5	178	98.9	2	--[8]
Caritas Norwood Hospital	501	169	33.7	89	21.8	80	86.0	13	14.0
Caritas St. Elizabeth's Medical Center of Boston	1,039	368	35.4	210	24.5	158	87.3	23	12.7
Charlton Memorial Hospital	1,554	526	33.8	307	23.0	219	99.5	1	--[8]
Cooley Dickinson Hospital	814	252	31.0	153	21.9	99	86.8	15	13.2
Emerson Hospital	1,160	427	36.8	227	24.2	200	89.7	23	10.3
Fairview Hospital	170	58	34.1	36	24.3	22	100.0	0	0.0
Falmouth Hospital	501	177	35.3	90	21.7	87	100.0	0	0.0
Harrington Memorial Hospital	307	97	31.6	53	20.3	44	95.7	2	--[8]
HealthAlliance Hospital	1,027	228	22.2	141	15.0	87	98.9	1	--[8]
Heywood Memorial Hospital	420	70	16.7	44	11.3	26	83.9	5	16.1
Holyoke Hospital	461	105	22.8	75	17.8	30	76.9	9	23.1
Jordan Hospital	583	211	36.2	125	25.4	86	95.6	4	--[8]
Lawrence General Hospital	1,670	540	32.3	219	16.4	321	97.0	10	3.0
Lowell General Hospital	2,384	776	32.6	420	20.9	356	93.9	23	6.1
Martha's Vineyard Hospital	138	48	34.8	24	21.1	24	100.0	0	0.0
Massachusetts General Hospital	3,692	1,144	31.0	693	21.9	451	86.2	72	13.8
Melrose-Wakefield Hospital	1,088	409	37.6	210	23.6	199	100.0	0	0.0
Mercy Medical Center	1,299	328	25.3	173	15.2	155	98.1	3	--[8]
Metrowest Medical Center-Framingham	951	404	42.5	211	28.0	193	98.0	4	--[8]
Milford Regional Medical Center	989	370	37.4	185	23.2	185	95.9	8	4.1
Morton Hospital	456	187	41.3	117	30.5	70	100.0	0	0.0

Table 21. Cesarean Deliveries and Vaginal Births after Cesarean (VBACs) by Licensed Maternity Facility, All Births, Massachusetts: 2011

Facility[1]	Occurrence Births[2]	Total Cesareans		Primary Cesareans[2]		Repeat Cesareans[2]		VBACs[2]	
		N	%[3,4]	N	%[3,5]	N	%[3,6]	N	%[7]
Mount Auburn Hospital	2,298	498	21.7	306	15.1	192	72.2	74	27.8
Nantucket Cottage Hospital	97	27	27.8	12	14.6	15	100.0	0	0.0
Newton Wellesley Hospital	4,109	1,308	31.8	766	21.9	542	88.1	73	11.9
North Adams Regional Hospital	273	77	28.2	48	20.1	29	85.3	5	14.7
North Shore Medical Center - Salem Hospital	1,550	495	31.9	276	20.8	219	97.3	6	2.7
Saint Vincent Hospital	1,908	599	31.4	377	23.0	222	81.9	49	18.1
South Shore Hospital	3,650	1,454	39.8	795	27.2	659	90.2	72	9.8
St. Luke's Hospital	1,401	505	36.0	271	23.2	234	100.0	0	0.0
Sturdy Memorial Hospital	826	282	34.1	147	21.5	135	95.1	7	4.9
Tobey Hospital	471	97	20.6	61	14.1	36	94.7	2	--[8]
Tufts Medical Center	1,128	463	41.0	287	31.3	176	83.4	35	16.6
UMass Memorial Medical Center - West Campus	4,044	1,164	28.8	623	18.2	541	86.8	82	13.2
Winchester Hospital	1,948	708	36.3	397	24.6	311	94.0	20	6.0

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest
As of 2011, Baystate Mary Lane Hospital is no longer a maternity facility

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth. 2. See Glossary for definitions of occurrence births, primary and repeat Cesarean sections, and VBACs. The percentages provided in this table are based on occurrence births, and may differ from data that are based on resident births presented elsewhere in this book. 3. The percentage of Cesarean births reported is not adjusted for risk factors such as mother's age, birthweight, or complications of labor and delivery, which would influence the number of procedures in a particular facility. Caution should be used when comparing unadjusted percentages. 4. Percentage of total Cesarean = (total Cesarean births/all births) x 100. 5. Percentage primary Cesarean = (primary Cesarean /(all births-repeat Cesarean - VBACs-unknown method of delivery)) x 100. 6. Percentage repeat Cesarean = (repeat Cesarean / (repeat Cesarean + VBACs)) x100. 7. Percentage VBACs= (VBAC deliveries/ (repeat Cesarean + VBAC)) x 100. 8. Calculations based on values of 1-4 are excluded.

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
STATE TOTAL	**73,497**	**73,169**	**5,458**	**3,480**	**310**	**230**	**370**
ABINGTON	0	195	13	--	1	1	--
ACTON	0	165	11	--	0	0	0
ACUSHNET	0	67	8	--	1	1	0
ADAMS	0	69	10	7	1	1	0
AGAWAM	0	279	18	8	2	2	--
ALFORD	0	1	0	0	0	0	0
AMESBURY	0	158	5	10	0	0	--
AMHERST	3	150	7	5	1	1	--
ANDOVER	0	231	13	--	2	2	--
ARLINGTON	2	568	32	--	0	0	--
ASHBURNHAM	1	53	--	--	0	0	0
ASHBY	0	29	--	--	1	0	0
ASHFIELD	0	7	--	0	0	0	0
ASHLAND	0	234	19	--	1	0	--
ATHOL	2	121	6	14	1	1	0
ATTLEBORO	827	495	32	24	2	2	--
AUBURN	1	157	15	5	0	0	0
AVON	0	47	6	--	0	0	0
AYER	1	101	11	6	0	0	--
BARNSTABLE	807	375	28	16	1	1	--
BARRE	0	33	0	--	0	0	0
BECKET	0	11	0	--	0	0	0
BEDFORD	1	142	10	--	0	0	--
BELCHERTOWN	0	116	6	--	0	0	0
BELLINGHAM	3	194	12	11	0	0	0
BELMONT	0	271	22	0	0	0	--
BERKLEY	0	55	6	--	1	1	0
BERLIN	1	25	0	0	0	0	0
BERNARDSTON	0	19	--	0	0	0	0
BEVERLY	2,176	396	17	9	2	1	--
BILLERICA	4	447	32	12	5	5	--
BLACKSTONE	1	84	5	5	0	0	0
BLANDFORD	0	12	--	--	0	0	0
BOLTON	0	42	--	0	0	0	0
BOSTON	20,908	8,062	743	401	43	34	42
BOURNE	0	173	11	5	0	0	0
BOXBOROUGH	2	33	--	0	0	0	0
BOXFORD	0	44	7	0	0	0	0
BOYLSTON	1	19	0	--	1	1	0
BRAINTREE	2	406	27	5	1	1	--
BREWSTER	1	58	--	--	0	0	0
BRIDGEWATER	0	204	11	--	1	0	--
BRIMFIELD	0	26	--	--	0	0	--
BROCKTON	1,950	1,444	144	121	10	8	8

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
BROOKFIELD	0	35	--	--	0	0	--
BROOKLINE	1	688	62	--	2	2	--
BUCKLAND	1	23	--	--	0	0	0
BURLINGTON	1	306	25	--	1	1	--
CAMBRIDGE	3,615	1,304	85	12	7	6	--
CANTON	1	226	12	0	0	0	--
CARLISLE	1	26	0	0	0	0	0
CARVER	0	113	10	6	0	0	--
CHARLEMONT	0	10	0	--	0	0	0
CHARLTON	1	113	10	5	1	1	0
CHATHAM	0	19	--	--	0	0	--
CHELMSFORD	2	318	22	--	0	0	0
CHELSEA	1	680	55	69	4	4	--
CHESHIRE	0	22	--	--	0	0	0
CHESTER	3	10	0	--	0	0	0
CHESTERFIELD	1	9	--	0	0	0	0
CHICOPEE	0	636	65	47	4	3	--
CHILMARK	0	5	0	0	0	0	0
CLARKSBURG	0	10	--	0	0	0	0
CLINTON	2	177	12	6	0	0	0
COHASSET	0	66	8	0	0	0	0
COLRAIN	0	14	0	--	0	0	0
CONCORD	1,162	101	7	--	0	0	0
CONWAY	0	11	0	0	0	0	0
CUMMINGTON	0	10	--	0	0	0	0
DALTON	1	52	--	--	0	0	--
DANVERS	1	241	13	--	0	0	0
DARTMOUTH	1	203	12	9	0	0	0
DEDHAM	2	259	15	--	0	0	--
DEERFIELD	0	30	--	0	0	0	--
DENNIS	1	98	9	--	0	0	0
DIGHTON	1	61	--	--	0	0	0
DOUGLAS	0	81	5	--	1	1	--
DOVER	0	30	--	0	0	0	0
DRACUT	0	362	22	10	1	1	--
DUDLEY	1	94	5	--	1	1	0
DUNSTABLE	0	14	--	--	0	0	0
DUXBURY	2	93	--	--	0	0	0
EAST BRIDGEWATER	2	111	9	--	0	0	--
EAST BROOKFIELD	0	17	0	0	0	0	0
EAST LONGMEADOW	0	143	11	--	0	0	0
EASTHAM	1	27	--	0	0	0	0
EASTHAMPTON	2	142	7	--	2	1	--
EASTON	0	205	8	--	0	0	--
EDGARTOWN	0	40	--	0	1	0	0

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
EGREMONT	1	7	0	0	0	0	0
ERVING	0	11	0	0	0	0	0
ESSEX	0	32	--	0	0	0	--
EVERETT	1	661	52	31	3	3	--
FAIRHAVEN	0	113	11	5	3	2	--
FALL RIVER	1,556	1,163	96	115	2	2	8
FALMOUTH	503	242	19	10	1	1	--
FITCHBURG	1	555	48	56	3	2	--
FLORIDA	0	6	0	0	0	0	0
FOXBOROUGH	0	171	9	0	1	1	--
FRAMINGHAM	957	902	73	31	1	0	5
FRANKLIN	1	327	10	5	3	2	0
FREETOWN	0	63	5	--	0	0	0
GARDNER	421	188	11	13	0	0	--
GAY HEAD	0	6	0	0	0	0	0
GEORGETOWN	1	65	--	--	0	0	--
GILL	0	5	--	0	0	0	0
GLOUCESTER	2	265	9	8	0	0	0
GOSHEN	1	10	0	0	0	0	0
GOSNOLD	0	0	0	0	0	0	0
GRAFTON	3	206	14	--	1	1	0
GRANBY	0	40	--	--	0	0	0
GRANVILLE	0	10	0	--	0	0	0
GREAT BARRINGTON	171	45	9	--	0	0	--
GREENFIELD	494	199	18	9	3	2	0
GROTON	2	80	--	--	0	0	0
GROVELAND	0	53	--	0	0	0	0
HADLEY	2	26	--	--	0	0	0
HALIFAX	1	90	8	5	1	1	--
HAMILTON	1	80	7	0	0	0	0
HAMPDEN	1	25	--	--	0	0	0
HANCOCK	0	2	0	0	0	0	0
HANOVER	0	125	9	--	0	0	0
HANSON	0	87	9	5	0	0	0
HARDWICK	1	13	--	0	0	0	0
HARVARD	0	30	0	0	0	0	0
HARWICH	1	97	5	--	0	0	0
HATFIELD	0	22	0	0	0	0	0
HAVERHILL	2	802	51	56	3	2	--
HAWLEY	1	2	0	0	0	0	--
HEATH	0	10	--	0	0	0	0
HINGHAM	1	233	13	--	0	0	0
HINSDALE	0	13	0	--	0	0	0
HOLBROOK	0	135	6	6	0	0	0
HOLDEN	2	154	6	--	0	0	--

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
HOLLAND	0	32	--	--	0	0	--
HOLLISTON	1	116	--	--	0	0	0
HOLYOKE	466	607	57	103	4	4	8
HOPEDALE	1	56	6	--	0	0	0
HOPKINTON	0	124	8	--	0	0	--
HUBBARDSTON	0	42	--	--	1	1	0
HUDSON	1	233	12	6	0	0	--
HULL	1	80	5	--	0	0	--
HUNTINGTON	0	23	0	0	0	0	0
IPSWICH	1	96	--	0	0	0	0
KINGSTON	0	111	11	--	0	0	0
LAKEVILLE	1	81	6	--	0	0	0
LANCASTER	2	54	--	--	0	0	0
LANESBOROUGH	0	24	0	0	0	0	0
LAWRENCE	1,674	1,418	125	163	7	6	7
LEE	0	46	0	--	0	0	--
LEICESTER	0	83	6	--	0	0	--
LENOX	2	31	--	0	0	0	--
LEOMINSTER	1,029	463	26	27	3	1	--
LEVERETT	0	8	0	--	0	0	0
LEXINGTON	0	214	13	--	0	0	--
LEYDEN	0	5	0	0	0	0	0
LINCOLN	0	77	--	--	0	0	0
LITTLETON	0	80	12	--	0	0	0
LONGMEADOW	1	104	8	--	0	0	0
LOWELL	2,389	1,686	128	151	6	4	10
LUDLOW	1	160	5	9	2	1	--
LUNENBURG	1	99	6	--	0	0	0
LYNN	2	1,523	105	119	13	7	12
LYNNFIELD	0	98	6	0	0	0	--
MALDEN	2	855	54	29	2	2	5
MANCHESTER	0	35	--	0	1	0	0
MANSFIELD	0	228	13	--	2	1	--
MARBLEHEAD	0	140	6	--	0	0	0
MARION	0	40	--	0	0	0	0
MARLBOROUGH	3	510	38	23	2	2	--
MARSHFIELD	0	210	9	--	2	1	0
MASHPEE	1	123	8	7	0	0	--
MATTAPOISETT	0	42	--	0	0	0	0
MAYNARD	0	111	6	--	0	0	--
MEDFIELD	1	80	6	0	0	0	0
MEDFORD	2	687	44	17	1	0	--
MEDWAY	1	111	7	--	3	3	--
MELROSE	1,090	313	22	--	0	0	--
MENDON	1	36	--	0	0	0	0

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
MERRIMAC	0	39	0	--	0	0	0
METHUEN	912	579	41	27	2	1	--
MIDDLEBOROUGH	1	231	16	12	2	2	0
MIDDLEFIELD	0	4	0	0	0	0	0
MIDDLETON	0	51	--	--	0	0	0
MILFORD	989	373	27	18	1	1	--
MILLBURY	0	115	9	--	1	1	0
MILLIS	0	91	--	--	0	0	0
MILLVILLE	3	29	0	--	0	0	0
MILTON	1	248	18	--	1	1	--
MONROE	0	0	0	0	0	0	0
MONSON	0	63	6	--	0	0	0
MONTAGUE	3	103	8	6	0	0	0
MONTEREY	1	5	--	0	0	0	0
MONTGOMERY	0	9	--	--	0	0	0
MOUNT WASHINGTON	0	1	0	0	0	0	0
NAHANT	0	13	--	0	0	0	0
NANTUCKET	101	115	--	--	0	0	--
NATICK	0	439	45	--	1	1	0
NEEDHAM	1	284	15	--	1	1	0
NEW ASHFORD	0	2	0	0	0	0	0
NEW BEDFORD	1,403	1,314	136	137	9	6	--
NEW BRAINTREE	0	10	0	0	0	0	0
NEW MARLBOROUGH	0	7	--	0	0	0	0
NEW SALEM	0	5	0	--	0	0	0
NEWBURY	0	39	--	--	1	1	0
NEWBURYPORT	592	175	11	6	1	1	--
NEWTON	4,114	787	49	6	4	3	7
NORFOLK	2	87	7	--	0	0	0
NORTH ADAMS	274	159	15	17	3	2	--
NORTH ANDOVER	3	278	24	--	0	0	--
NORTH ATTLEBORO	2	323	22	5	0	0	--
NORTH BROOKFIELD	1	55	--	5	1	1	0
NORTH READING	0	150	7	--	0	0	0
NORTHAMPTON	828	200	--	5	0	0	0
NORTHBOROUGH	2	129	--	--	1	0	0
NORTHBRIDGE	1	180	22	6	1	1	0
NORTHFIELD	0	24	--	--	0	0	0
NORTON	0	147	--	5	0	0	--
NORWELL	0	75	--	--	0	0	0
NORWOOD	504	402	24	6	1	1	--
OAK BLUFFS	138	54	--	--	0	0	0
OAKHAM	0	17	0	0	0	0	0
ORANGE	0	70	--	7	0	0	--
ORLEANS	1	32	--	--	0	0	--

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
OTIS	0	11	--	0	0	0	0
OXFORD	0	183	15	14	1	1	0
PALMER	0	121	12	--	1	1	--
PAXTON	1	26	--	0	0	0	0
PEABODY	0	549	39	10	2	2	--
PELHAM	0	5	--	0	0	0	0
PEMBROKE	0	183	16	--	0	0	0
PEPPERELL	1	95	7	5	1	1	0
PERU	0	11	0	0	0	0	0
PETERSHAM	0	3	0	--	0	0	0
PHILLIPSTON	0	18	--	0	0	0	0
PITTSFIELD	664	528	41	45	4	3	--
PLAINFIELD	0	3	0	0	0	0	0
PLAINVILLE	0	87	8	--	1	0	0
PLYMOUTH	585	510	31	17	1	0	--
PLYMPTON	0	22	--	--	0	0	0
PRINCETON	1	16	--	0	0	0	0
PROVINCETOWN	0	15	--	--	0	0	--
QUINCY	3	1,276	96	25	4	2	8
RANDOLPH	1	398	48	12	1	1	--
RAYNHAM	0	133	7	--	0	0	--
READING	0	231	16	--	1	1	--
REHOBOTH	1	91	5	--	0	0	0
REVERE	0	771	51	35	1	1	--
RICHMOND	1	6	0	0	0	0	0
ROCHESTER	0	34	--	--	0	0	0
ROCKLAND	1	214	15	7	3	3	0
ROCKPORT	0	36	--	0	0	0	0
ROWE	0	3	0	0	0	0	0
ROWLEY	0	52	--	--	0	0	--
ROYALSTON	0	3	0	0	0	0	0
RUSSELL	1	18	--	--	0	0	0
RUTLAND	0	66	--	--	0	0	0
SALEM	1,552	497	28	21	2	2	--
SALISBURY	0	72	--	--	0	0	0
SANDISFIELD	0	5	0	0	0	0	0
SANDWICH	0	141	6	--	1	1	0
SAUGUS	0	248	25	--	1	1	--
SAVOY	0	2	0	0	0	0	0
SCITUATE	2	145	15	--	2	2	--
SEEKONK	0	102	6	5	1	1	0
SHARON	2	130	7	--	0	0	0
SHEFFIELD	0	23	0	--	0	0	0
SHELBURNE	1	13	--	--	0	0	0
SHERBORN	0	31	--	--	0	0	0

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
SHIRLEY	0	52	7	--	0	0	0
SHREWSBURY	3	383	26	--	2	2	--
SHUTESBURY	3	19	--	--	0	0	0
SOMERSET	0	136	12	5	1	0	0
SOMERVILLE	7	978	67	26	3	1	--
SOUTH HADLEY	3	136	6	9	2	1	0
SOUTHAMPTON	0	56	9	--	0	0	0
SOUTHBOROUGH	1	76	13	0	0	0	0
SOUTHBRIDGE	308	202	20	28	0	0	0
SOUTHWICK	0	67	5	5	1	0	0
SPENCER	1	144	9	8	1	1	0
SPRINGFIELD	5,644	2,393	197	367	19	12	27
STERLING	2	52	5	--	0	0	0
STOCKBRIDGE	1	13	0	0	0	0	0
STONEHAM	0	204	7	--	1	1	--
STOUGHTON	2	268	20	9	0	0	--
STOW	1	51	--	0	0	0	0
STURBRIDGE	2	105	10	--	0	0	0
SUDBURY	0	127	6	0	0	0	--
SUNDERLAND	0	31	--	0	1	0	0
SUTTON	0	72	8	--	0	0	--
SWAMPSCOTT	1	138	7	--	0	0	0
SWANSEA	0	142	10	7	0	0	0
TAUNTON	457	652	48	36	2	2	6
TEMPLETON	1	82	--	--	0	0	--
TEWKSBURY	1	294	20	0	1	0	--
TISBURY	0	40	--	--	0	0	0
TOLLAND	0	4	--	0	0	0	0
TOPSFIELD	0	45	0	0	0	0	0
TOWNSEND	0	70	--	--	0	0	0
TRURO	1	7	--	0	0	0	0
TYNGSBOROUGH	0	112	8	--	0	0	--
TYRINGHAM	0	2	0	0	0	0	0
UPTON	0	53	--	0	0	0	0
UXBRIDGE	1	134	11	7	1	0	0
WAKEFIELD	2	299	25	--	2	2	--
WALES	0	14	0	0	0	0	0
WALPOLE	0	246	20	--	0	0	--
WALTHAM	3	847	68	20	0	0	--
WARE	2	97	--	8	1	0	0
WAREHAM	472	201	11	17	1	1	--
WARREN	0	49	--	--	0	0	--
WARWICK	0	6	--	0	0	0	0
WASHINGTON	0	5	--	0	0	0	0
WATERTOWN	2	511	36	--	0	0	--

Table 22. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2011

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
WAYLAND	0	112	6	--	0	0	--
WEBSTER	1	215	18	22	0	0	--
WELLESLEY	2	204	17	--	0	0	0
WELLFLEET	1	17	0	0	0	0	0
WENDELL	0	10	--	--	0	0	0
WENHAM	0	26	0	--	0	0	0
WEST BOYLSTON	0	54	6	--	0	0	0
WEST BRIDGEWATER	1	70	7	--	0	0	0
WEST BROOKFIELD	0	28	--	--	0	0	0
WEST NEWBURY	0	23	--	0	2	1	0
WEST SPRINGFIELD	0	372	28	21	3	2	--
WEST STOCKBRIDGE	0	7	--	0	0	0	0
WEST TISBURY	0	22	--	0	0	0	0
WESTBOROUGH	1	255	16	--	0	0	--
WESTFIELD	1	376	26	19	2	1	--
WESTFORD	1	166	10	--	1	1	0
WESTHAMPTON	1	7	0	--	0	0	0
WESTMINSTER	0	50	--	--	0	0	0
WESTON	1	59	--	0	0	0	0
WESTPORT	0	98	--	--	0	0	0
WESTWOOD	1	113	5	--	0	0	0
WEYMOUTH	3,652	666	46	13	6	3	--
WHATELY	0	12	0	0	0	0	0
WHITMAN	1	162	11	6	0	0	--
WILBRAHAM	0	106	9	0	0	0	0
WILLIAMSBURG	1	20	--	0	0	0	0
WILLIAMSTOWN	0	42	--	0	0	0	0
WILMINGTON	0	215	16	5	2	2	--
WINCHENDON	1	105	8	--	0	0	0
WINCHESTER	1,949	198	13	--	1	0	0
WINDSOR	0	5	0	0	0	0	0
WINTHROP	1	176	15	5	1	0	--
WOBURN	2	470	32	5	2	2	--
WORCESTER	5,960	2,458	194	193	15	12	22
WORTHINGTON	1	6	0	0	0	0	0
WRENTHAM	0	82	8	0	0	0	0
YARMOUTH	0	187	10	11	0	0	--

Note that infant deaths are based on the death file as December 9, 2013.
1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details.
2. Births to mothers who report their usual place of residence as a particular geographical place (state, or city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more.
-- Due to small numbers (n=1-4), exact count not provided.

Table 23. Birth Characteristics: Occurrence and Resident Births and Infant Deaths by County, Massachusetts: 2011

County	Occurrence Births[1]	Resident Births[2]			Deaths		
		Number	Low Birthweight[3]	Teen Births (15-19 years)	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
STATE TOTAL	**73,497**	**73,169**	**5,458**	**3,480**	**310**	**230**	**370**
Barnstable	1318	1611	108	67	3	3	9
Berkshire	1116	1173	98	86	8	6	8
Bristol	4248	5791	448	373	24	18	28
Dukes	138	167	11	--[7]	1	0	0
Essex	6920	8537	567	454	39	27	40
Franklin	503	650	47	35	4	2	--[7]
Hampden	6118	5587	460	601	38	26	48
Hampshire	845	1082	54	41	6	3	--[7]
Middlesex	15323	17568	1228	458	51	39	81
Nantucket	101	115	--[7]	--[7]	0	0	--[7]
Norfolk	4183	7322	523	115	25	18	29
Plymouth	3021	5106	398	235	24	19	24
Suffolk	20910	9689	864	510	49	39	48
Worcester	8753	8770	650	499	38	30	47

Note that infant deaths are based on the death file as December 9, 2013.
1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 2. Births to mothers who report their usual place of residence as a particular geographical place (state, or city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more. 7. Due to small numbers (n=1-4), exact count not provided.

Table 24. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Community Health Network Areas (CHNAs), Massachusetts: 2011

Community Health Network Area	Occurrence Births[1]	Resident Births[2]			Deaths		
		Number	LBW[3]	Teen Births (15-19 years)	Infant[4]	Neonatal[5]	Fetal[6]
STATE TOTAL	**73,497**	**73,169**	**5,458**	**3,480**	**310**	**230**	**370**
1. Community Health Network of Berkshire County	1,116	1,173	98	86	8	6	8
2. Upper Valley Health Web (Franklin County)	505	795	55	50	5	3	--[7]
3. Partnership for Health in Hampshire County (Northampton)	845	1,059	54	41	6	3	--[7]
4. The Community Health Connection (Springfield)	5,647	3,726	301	417	26	17	31
5. Community Health Network of Southern Worcester County	315	1,312	104	100	5	5	7
6. Community Partners for Health (Milford)	1,002	1,730	120	62	10	8	7
7. Community Health Network of Greater Metro West (Framingham)	970	4,294	312	86	8	4	18
8. Community Wellness Coalition (Worcester)	5,971	3,655	279	213	20	17	28
9. Fitchburg/Gardner Community Health Network	1,468	2,599	175	148	9	5	8
10. Greater Lowell Community Health Network	2,397	3,399	243	182	14	11	18
11. Greater Lawrence Community Health Network	2,589	2,557	206	197	11	9	12
12. Greater Haverhill Community Health Network	595	1,522	87	80	7	5	7
13. Community Health Network North (Beverly/Gloucester)	2,180	1,011	43	18	3	1	--[7]
14. North Shore Community Health Network	1,556	3,447	231	159	18	12	19
15. Greater Woburn/Concord/Littleton Community Health Network	3,118	2,027	144	25	6	5	8
16. North Suburban Health Alliance (Medford/Malden/Melrose)	1,097	3,400	227	88	10	9	19
17. Greater Cambridge/Somerville Community Health Network	3,626	3,632	242	43	10	7	10
18. West Suburban Health Network (Newton/Waltham)	4,124	2,583	173	31	5	4	12
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	20,911	10,377	926	511	51	41	52
20. Blue Hills Community Health Alliance (Greater Quincy)	4,170	4,351	323	75	16	11	20
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	471	1,812	153	179	12	9	15
22. Greater Brockton Community Health Network	1,956	2,841	235	159	12	9	17
23. South Shore Community Partners in Prevention (Plymouth)	589	1,758	125	51	7	5	--[7]
24. Greater Attleboro-Taunton Health & Education Response	1,290	2,599	168	101	10	9	13
25. Partners for a Healthier Community (Fall River)	1,556	1,539	122	129	3	2	8
26. Greater New Bedford Health & Human Services Coalition	1,876	2,077	191	176	14	10	10
27. Cape and Islands Community Health Network	1,557	1,893	121	73	4	3	10

Note that infant deaths are based on the death file as June 20, 2013.

1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 2. Births to mothers who report their usual place of residence as a particular geographical place (state, city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more. 7. Due to small numbers (n=1-4), exact count not provided.

Table 25. Mothers[1] who Used Infertility Treatments, Massachusetts: 2011

	Fertility Drug Only		Additional Fertility Assistance[2]	
	N	%[3]	N	%[3]
State total	**193**	**15.4%**	**1,064**	**84.6%**
Maternal Demographics				
Race/Hispanic Ethnicity	**N**	**%[4]**	**N**	**%[4]**
White non-Hispanic	154	79.8%	881	83.1%
Black non-Hispanic	6	3.1%	38	3.6%
Asian	13	6.7%	86	8.1%
Hispanic	19	9.8%	48	4.5%
Other	--[8]	--[8]	7	0.7%
Birthplace				
US States / D.C./US Terr.	152	78.8%	869	81.7%
Non US-born	41	21.2%	195	18.3%
Prenatal care funding				
Public	18	9.4%	51	4.8%
Private, other	174	90.6%	1010	95.2%
Pregnancy-Related Factors				
Adequacy of Prenatal Care[5]				
Adequate Total[6]	155	92.8%	949	94.6%
Adequate Intensive	99	59.3%	687	68.5%
Adequate Basic	56	33.5%	262	26.1%
Intermediate	4	2.4%	28	2.8%
Inadequate/None	8	4.8%	26	2.6%
Parity				
1	122	63.2%	703	66.1%
2	55	28.5%	266	25.0%
3+	16	8.3%	95	8.9%
Age				
20-29	44	22.9%	93	8.7%
30-34	86	44.8%	379	35.6%
35-39	49	25.5%	391	36.7%
40+	13	6.8%	201	18.9%
Birth Outcomes				
Gestational age				
< 28 weeks (extremely preterm)	--[8]	--[8]	21	2.0%
< 37 weeks (preterm)[9]	26	13.5%	249	23.4%
37+	167	86.5%	815	76.6%
Plurality				
Singleton	163	84.5%	769	72.3%
Multiple birth	30	15.5%	295	27.7%

NOTE: Fertility assistance is known to be under-reported by facilities, interpret with caution. All percentages are calculated based on only mothers with known values for the characteristic(s) of interest, unless otherwise stated.

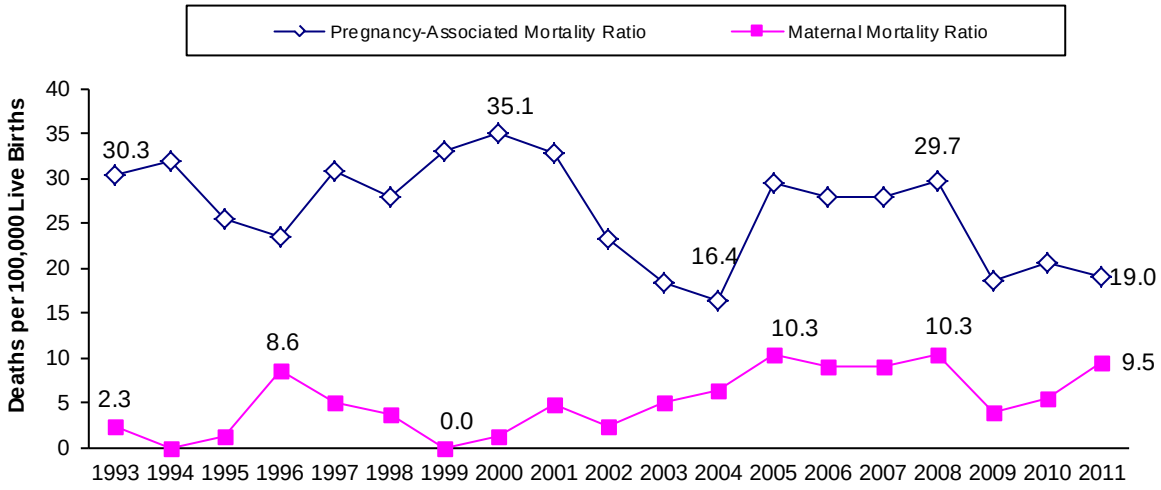
1. The unit of analysis for this table is unique mothers, not births. 2. Additional fertility assistance includes Assisted Reproductive Technology (ART) and those who used both fertility drugs and ART. 3. For state total row, percentages are based on total births where infertility treatment was present. 4. Percent is based on state total of the treatment methods. 5. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 6. Adequate Total = Adequate Basic + Adequate Intensive. 7. Number of live births including the current birth. 8. Numbers and calculations based on 1-4 events are excluded. 9. Categories are not mutually exclusive so percent will add to more than 100%

Table 26. Number of Pregnancy-Associated and Maternal Deaths, Massachusetts: 2000-2011

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Pregnancy Associated Deaths[1]	29	27	19	15	13	23	22	22	24	14	15	14
Maternal Deaths[2]	1	4	2	4	5	8	7	7	8	3	4	7

1. Pregnancy-associated death is defined as the death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause. 2. Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes.

Figure 14. Trends in Pregnancy-Associated and Maternal Mortality, Massachusetts: 1993-2011



NOTE: Ratios shown in graph are per 100,000 live births. Ratios are based on occurrence births, not resident births.

Pregnancy-associated death is defined as the death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause. The pregnancy-associated mortality ratio is the number of pregnancy-associated deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for further information). Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes. Maternal mortality ratio is the number of maternal deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for more information.)

2012 TABLES AND FIGURES

Table 27. Trends in Birth Characteristics, Massachusetts: 1990, 1998-2012

Characteristic		1990	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Births[1]	**n**[2]	92,461	81,406	80,866	81,582	81,014	80,624	80,167	78,460	76,824	77,670	77,934	76,969	74,966	72,835	73,169	72,457
	Rate[3]	62.1	55.6	55.9	57.1	56.6	56.8	56.8	56.2	55.6	56.9	57.2	56.5	55.1	53.7	54.1	53.3
Race of Mother																	
White non-Hispanic	**n**	72,483	61,764	60,402	60,051	59,115	58,136	57,604	55,322	53,469	52,975	52,620	51,760	49,759	48,466	45,973	45,032
	%[4]	78.4	75.9	74.7	73.6	73.0	72.1	71.9	70.5	69.6	68.2	67.5	67.2	66.4	66.5	62.8	62.1
Black non-Hispanic	**n**	7,158	5,549	5,844	5,755	5,862	5,948	5,902	6,053	6,077	6,452	6,462	6,652	6,945	6,794	6,999	6,892
	%[4]	7.7	6.8	7.2	7.1	7.2	7.4	7.4	7.7	7.9	8.3	8.3	8.6	9.3	9.3	9.6	9.5
Asian	**n**	3,349	3,748	4,138	4,667	4,784	5,300	5,224	5,454	5,251	5,469	5,758	5,958	5,939	5,817	6,022	6,530
	%[4]	3.6	4.6	5.2	5.7	5.9	6.6	6.5	7.0	6.8	7.0	7.4	7.7	7.9	8.0	8.2	9.0
Hispanic	**n**	8,406	8,665	8,815	9,247	9,410	9,543	9,764	9,798	10,061	10,696	10,861	10,895	10,986	10,588	12,777	13,088
	%[4]	9.1	10.6	10.9	11.3	11.6	11.8	12.2	12.5	13.1	13.8	13.9	14.2	14.7	14.5	17.5	18.1
Teen Births	**n**	7,258	5,823	5,515	5,305	4,979	4,642	4,639	4,559	4,539	4,722	4,944	4,583	4,477	3,907	3,480	3,219
(Ages 15-19)	**Rate**[3]	35.4	28.1	26.7	25.9	24.9	23.3	23.0	22.2	21.7	21.3	22.0	20.1	19.5	17.1	15.4	14.0
Births to Unmarried	**n**	22,837	21,191	21,448	21,621	21,620	21,604	22,262	22,376	23,170	24,977	26,010	26,146	26,029	25,220	25,349	24,900
	%	24.7	26.0	26.5	26.5	26.7	26.8	27.8	28.5	30.2	32.2	33.4	34.0	34.7	34.6	34.8	34.5
Cesarean Deliveries	**n**	20,615	16,975	18,080	19,086	20,639	22,553	23,392	24,295	24,732	25,901	26,240	26,240	25,067	24,244	23,062	22,900
	%	22.3	20.9	22.4	23.4	25.5	28.0	29.2	31.0	32.3	33.4	33.7	34.3	33.6	33.3	32.5	31.7
Gestational Diabetes[5]	**n**				2,245	2,402	2,633	2,693	2,741	2,666	2,925	3,279	3,086	3,445	3,368	3,698	4,070
	%				2.8	3.0	3.3	3.4	3.5	3.5	3.8	4.2	4.0	4.7	4.7	5.1	5.6
Low Birthweight[6]	**n**	5,388	5,655	5,708	5,711	5,795	6,060	6,115	6,125	6,073	6,150	6,147	5,955	5,804	5,650	5,458	5,491
	%	5.8	7.0	7.1	7.1	7.2	7.5	7.6	7.8	7.9	7.9	7.9	7.8	7.8	7.8	7.6	7.6
Preterm[7]	**n**	5,899	6,117	6,136	6,582	6,412	6,795	6,963	7,222	6,925	6,954	6,980	6,750	6,516	6,234	5,992	6,107
	%	6.5	7.6	7.6	8.3	8.0	8.5	8.7	9.2	9.0	9.0	9.0	8.8	8.7	8.6	8.4	8.6
Late Preterm[8]	**n**	3,977	4,186	4,153	4,509	4,428	4,726	4,800	5,016	4,808	4,918	4,945	4,753	4,602	4,361	4,206	4,422
	%	4.4	5.2	5.2	5.7	5.5	5.9	6.0	6.4	6.3	6.3	6.4	6.2	6.2	6.0	5.9	6.2
Prenatal Care																	
Public Pay Prenatal Care[9]	**%**	25.1	24.5	26.1	26.5	27.2	27.9	28.3	29.9	31.9	33.5	34.9	34.5	35.3	35.8	38.8	39.8
APNCU Index[10]	**%**		82.9	82.9	83.3	85.2	84.7	84.5	84.2	84.0	83.1	82.8	82.1	84.3	84.9	82.8	83.4
Adjusted APNCU Index[11]	**%**															85.3	85.4

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. Births presented in all tables are resident live births unless otherwise specified. 2. Differences in numbers of births from previous publications are the result of updated files. 3. Birth rates represent the total number of births to women ages 15-44 years per 1,000 females ages 15-44; teen birth rates refer to number of births per 1,000 females ages 15-19. 4. Percentages are calculated based on births, including those to mothers of unknown race.
5. Gestational diabetes is defined as glucose intolerance found for the first time during pregnancy. It excludes cases with known pre-existing diabetes. 6. Low birthweight: less than 2,500 grams or 5.5 pounds. 7. Preterm: <37 weeks gestation. 8. Late preterm: 34-36 weeks of gestation. 9. Government programs including CommonHealth, Healthy Start, Medicaid/MassHealth, and Medicare (may also be HMO or managed care), or free care; other: Worker's Compensation and other sources. 10. Beginning with Births 2001, the APNCU Index has replaced the Kessner Index as the standard measurement of adequacy of prenatal care (see Technical Notes for more information).
11. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.

Table 28. Birth Characteristics by Maternal Race/Hispanic Ethnicity and Birthplace, Massachusetts: 2012

Race and Hispanic Ethnicity (by mother's birthplace)	Births		Teen Births				Birthweight				Prenatal Care				Cesarean Deliveries		Breastfeeding[5]	
			<18 Years		<20 Years		Very Low[2]		Low[3]		Adequate[4]		1st Trimester					
	n	%[1]	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
State Total	**72,457**	**100.0**	**872**	**1.2**	**3,254**	**4.5**	**878**	**1.2**	**5,491**	**7.6**	**50,943**	**85.4**	**57,765**	**82.1**	**22,900**	**31.7**	**58,329**	**82.7**
US inc. DC	50,240	69.3	657	1.3	2,516	5.0	595	1.2	3,783	7.5	35,817	86.7	41,023	83.7	15,910	31.8	38,646	79.5
US Territories[7]	1,846	2.5	95	5.1	269	14.6	46	2.5	181	9.8	1,314	81.0	1,379	76.7	579	31.4	1,369	75.1
Non-US-born[8]	20,369	28.1	120	0.6	468	2.3	237	1.2	1,527	7.5	13,811	82.6	15,361	78.6	6,411	31.6	18,313	91.3
White Non-Hispanic	**45,032**	**62.1**	**285**	**0.6**	**1,234**	**2.7**	**474**	**1.1**	**3,076**	**6.8**	**31,980**	**87.7**	**37,342**	**84.8**	**14,573**	**32.4**	**35,581**	**81.6**
US inc. DC	40,190	89.2	278	0.7	1,184	2.9	426	1.1	2,753	6.9	28,656	88.1	33,484	85.1	13,072	32.6	31,194	80.2
US Territories[7]	12	0.0	0	0.0	0	0.0	0	0.0	0	0.0	9	90.0	11	91.7	5	41.7	11	91.7
Non-US-born[8]	4,828	10.7	7	0.1	49	1.0	48	1.0	323	6.7	3,314	84.9	3,845	82.1	1,496	31.0	4,375	92.7
Black non-Hispanic	**6,892**	**9.5**	**103**	**1.5**	**454**	**6.6**	**137**	**2.0**	**705**	**10.2**	**4,638**	**77.7**	**4,796**	**73.4**	**2,343**	**34.1**	**5,792**	**85.2**
US inc. DC	3,199	46.4	86	2.7	366	11.4	65	2.0	374	11.7	2,302	80.1	2,375	77.7	984	30.9	2,406	76.3
US Territories[7]	2	--[6]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	--[6]
Non-US-born[8]	3,691	53.6	17	0.5	88	2.4	72	2.0	331	9.0	2,336	75.4	2,421	69.7	1,359	36.9	3,385	92.9
Hispanic	**13,088**	**18.1**	**455**	**3.5**	**1,447**	**11.1**	**196**	**1.5**	**1,109**	**8.5**	**9,159**	**81.6**	**9,739**	**77.4**	**3,811**	**29.1**	**10,662**	**82.6**
US inc. DC	5,215	39.8	266	5.1	868	16.6	81	1.6	491	9.4	3,738	81.6	3,939	77.5	1,437	27.6	3,842	75.2
US Territories[7]	1,830	14.0	95	5.2	269	14.7	46	2.5	181	9.9	1,305	80.9	1,367	76.6	574	31.4	1,356	74.9
Non-US-born[8]	6,043	46.2	94	1.6	310	5.1	69	1.1	437	7.2	4,116	81.8	4,433	77.6	1,800	29.8	5,464	91.3
Asian	**6,530**	**9.0**	**18**	**0.3**	**78**	**1.2**	**59**	**0.9**	**506**	**7.8**	**4,611**	**86.8**	**5,289**	**82.7**	**1,913**	**29.3**	**5,682**	**87.9**
US inc. DC	1,103	16.9	16	1.5	64	5.8	18	1.6	106	9.6	816	87.7	892	82.6	274	24.9	907	83.4
US Territories[7]	1	--[6]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	--[6]	0	0.0	1	--[6]
Non-US-born[8]	5,426	83.1	2	--[6]	14	0.3	41	0.8	400	7.4	3,795	86.6	4,396	82.7	1,639	30.3	4,774	88.9
American Indian[9]	**241**	**0.3**	**9**	**3.7**	**22**	**9.1**	**1**	**--[6]**	**31**	**12.9**	**163**	**78.0**	**181**	**77.4**	**82**	**34.2**	**171**	**73.4**
US inc. DC	239	99.2	9	3.8	22	9.2	1	--[6]	31	13.0	161	77.8	179	77.2	82	34.5	169	73.2
US Territories[7]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-US-born[8]	2	--[6]	0	0.0	0	0.0	0	0.0	0	0.0	2	--[6]	2	--[6]	0	0.0	2	--[6]
Other[10]	**407**	**0.6**	**1**	**--[6]**	**11**	**2.7**	**9**	**2.2**	**41**	**10.1**	**270**	**78.7**	**299**	**77.5**	**138**	**33.9**	**331**	**88.7**
US inc. DC	105	25.8	1	--[6]	5	4.8	2	--[6]	14	13.3	68	74.7	81	79.4	36	34.3	70	73.7
US Territories[7]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-US-born[8]	302	74.2	0	0.0	6	2.0	7	2.3	27	9.0	202	80.2	218	76.8	102	33.8	261	93.9
Unknown[11]	**267**	**0.4**	**1**	**--[6]**	**8**	**3.0**	**2**	**--[6]**	**23**	**13.9**	**122**	**85.3**	**119**	**78.8**	**40**	**25.0**	**110**	**76.4**

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. In the column "Births %," the percentages of the race/Hispanic groups (bolded) are based on the state total (including births of unknown race/ethnicity), and the birthplace percents for the race/ethnicities are based on the total number in race/Hispanic ethnicity category. For all other categories, percentages are based on row totals. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low birthweight: less than 2,500 grams or 5.5 pounds. 4 Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 5. Infant was being breastfed at time of discharge. 6. Calculations based on 1-4 events are excluded. 7. The category "US Territories" includes women born in Puerto Rico, the US Virgin Islands, and Guam. Approximately 95% of the births in this category were to women born in Puerto Rico. 8. The category "Non-US-born" includes women born outside of the 50 US states, District of Columbia, and the US territories. 9. Mothers who selected American Indian as their race. 10. Mothers who indicated "Other" as their race. 11. Mothers who did not indicate a race/ethnicity.

Table 29. Birth Characteristics by Maternal Ancestry, Massachusetts: 2012

Maternal Ancestry	Births[1]		Teen Births				Low Birthweight[2]		Prenatal Care				Late Preterm[4]		Cesarean Section		Breast-feeding[5]		Gestational Diabetes[6]	
			<18 years		<20 Years				Adequate[3]		1st Trimester									
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
State Total	**72,457**	**100.0**	**872**	**1.2**	**3,254**	**4.5**	**5,491**	**7.6**	**50,943**	**85.4**	**57,765**	**82.1**	**4,422**	**6.2**	**22,900**	**31.7**	**58,329**	**82.7**	**4,070**	**5.6**
American	35,876	49.5	337	0.9	1,350	3.8	2,474	6.9	25,495	87.5	29,828	84.6	2,205	6.2	11,628	32.4	28,356	79.6	1,756	4.9
European	9,077	12.5	29	0.3	147	1.6	518	5.7	6,231	89.1	7,741	86.8	552	6.1	2,891	31.9	7,979	89.3	406	4.5
Puerto Rican	4,842	6.7	271	5.6	833	17.2	473	9.8	3,475	80.3	3,648	76.7	349	7.2	1,404	29.0	3,389	71.0	313	6.5
African American	3,317	4.6	89	2.7	353	10.6	386	11.7	2,354	79.6	2,441	77.1	232	7.0	1,033	31.2	2,482	75.8	161	4.9
Dominican	2,454	3.4	72	2.9	241	9.8	220	9.0	1,815	80.9	1,837	77.3	159	6.5	781	31.9	2,133	87.8	126	5.1
Portuguese	2,029	2.8	30	1.5	128	6.3	139	6.9	1,596	85.4	1,625	80.6	113	5.6	741	36.5	1,261	63.0	139	6.9
Chinese	1,936	2.7	0	0.0	4	--[7]	106	5.5	1,464	90.0	1,653	86.6	95	4.9	500	25.9	1,728	90.0	167	8.6
Asian Indian	1,802	2.5	0	0.0	3	--[7]	181	10.0	1,108	87.1	1,491	84.4	135	7.6	660	36.7	1,714	96.2	228	12.7
African	1,758	2.4	5	0.3	37	2.1	128	7.3	1,053	76.7	1,141	68.7	86	4.9	629	35.9	1,614	92.6	148	8.4
Brazilian	1,647	2.3	17	1.0	58	3.5	114	6.9	1,042	85.6	1,350	83.9	96	5.9	680	41.3	1,538	94.3	92	5.6
Haitian	1,307	1.8	2	--[7]	17	1.3	151	11.6	860	74.2	848	68.6	90	6.9	495	37.9	1,201	93.0	103	7.9
Salvadoran	1,188	1.6	40	3.4	106	8.9	89	7.5	774	84.8	826	78.4	69	5.8	228	19.2	1,076	91.4	69	5.8
Cape Verdean	1,185	1.6	28	2.4	127	10.7	103	8.7	887	79.3	854	74.8	76	6.5	399	33.7	989	84.4	55	4.6
Middle Eastern	1,047	1.4	0	0.0	8	0.8	73	7.0	711	83.5	816	81.2	37	3.6	328	31.4	955	92.3	62	5.9
Guatemalan	935	1.3	15	1.6	65	7.0	68	7.3	587	76.5	604	67.9	40	4.3	226	24.2	843	91.9	59	6.3
Vietnamese	826	1.1	4	--[7]	14	1.7	42	5.1	571	86.0	641	81.0	41	5.0	259	31.4	674	82.1	96	11.6
Cambodian	690	1.0	15	2.2	49	7.1	68	9.9	535	81.9	476	69.9	54	7.9	146	21.2	397	59.0	64	9.3
Russian	658	0.9	0	0.0	12	1.8	50	7.6	440	83.3	529	80.9	38	5.8	149	22.6	611	93.9	31	4.7
Mexican	576	0.8	10	1.7	32	5.6	40	7.0	404	83.5	431	77.5	31	5.4	156	27.1	490	86.9	44	7.6
West Indian Caribbean	470	0.6	3	--[7]	25	5.3	52	11.1	341	81.4	345	77.0	33	7.0	148	31.6	433	92.3	26	5.5
Other South American	449	0.6	7	1.6	19	4.2	16	3.6	306	83.8	356	80.7	22	4.9	139	31.0	409	92.1	24	5.3
Korean	432	0.6	1	--[7]	1	--[7]	25	5.8	315	87.5	364	86.3	20	4.6	109	25.3	414	95.8	43	10.0
Native American	414	0.6	12	2.9	38	9.2	39	9.4	294	81.9	310	76.4	32	7.7	120	29.0	309	75.4	21	5.1
Colombian	378	0.5	6	1.6	15	4.0	22	5.8	266	86.1	300	85.2	21	5.6	112	29.6	335	90.1	21	5.6

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. Since 2009, certain ancestry groups were combined: Lebanese, Iranian, Israeli, and Other Middle Eastern ancestries were combined into "Middle Eastern"; and Nigerian and Other African were combined into "African." 1. In the column "Births," percentages are based on column total (state total of births, including births for which maternal ethnicity is unknown and other). For all other categories, percentages are based on row totals. 2. Low birthweight: less than 2,500 grams or 5.5 pounds. 3. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 4. Late preterm: 34-36 weeks gestation. 5. Infant was being breastfed at time of discharge. 6. Gestational diabetes is defined as glucose intolerance found during pregnancy for the first time. It excludes cases with pre-existing diabetes. 7. Calculations based on 1-4 events are excluded.

Figure 15. Trends in the Percent of Births by Mother's Age Group, Massachusetts: 1980-2012

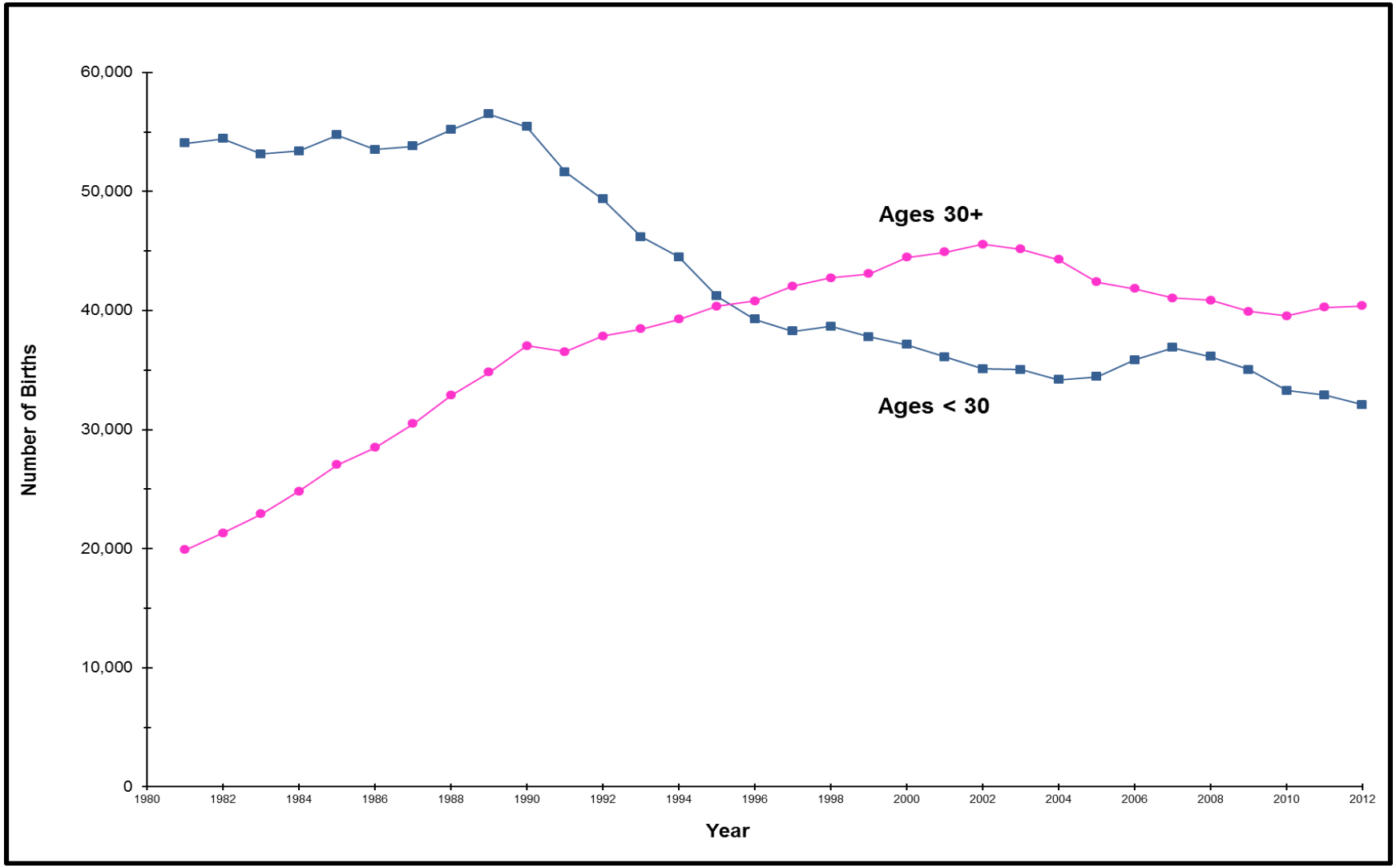


Table 30. Age-Specific and Crude Birth Rates, Massachusetts: 1990 and 2012

	1990		2012		
Mother's Age	**Births[1]**	**Rate**	**Births**	**Rate[2]**	**Percent Change in Rate**
10-14	124	1.3	34	0.2	-84.6%
15-19	7,259	35.1	3,219	14.0	-60.1%
20-24	18,115	69.5	10,869	45.8	-34.1%
25-29	29,913	107.2	17,947	76.6	-28.5%
30-34	25,687	93.9	24,020	111.2	18.4%
35-39	9,795	40.1	13,109	64.6	61.1%
40-44	1,522	6.9	2,989	12.8	85.5%
45+[3]	46	0.3	269	1.1	266.7%
Birth Rate[4] (ages 15-44)	92,290	62.2	72,153	53.3	-14.3%
Crude Birth Rate[5]	92,461	15.4	72,457	10.9	-29.2%

NOTE: All percentages are calculated based on only births with known values for the characteristic(s) of interest, unless otherwise stated.

1. Differences in the number of births from previous publications are the result of updated files. The number of births for all age groups does not always add to the total number of births because mother's age is sometimes not recorded on the birth certificate.
2. Population estimates from the National Center for Health Statistics for 2012 were used to calculate birth rates at the state level.
3. Denominator is the female population ages 45-49.
4. Rate represents the total number of births to women ages 15-44 per 1,000 females in the population ages 15 to 44.
5. Births per 1,000 residents (male and female). Includes births to mothers of all age groups and mothers for whom age is unknown.

Table 31. Trends in Number and Percent Distribution of Births by Plurality and Age Massachusetts: 1998-2012

Age Group / Year	Singletons		Multiples[1]						Total births[2]	
			Twins		Triplets or more		Total Multiples			
	n	%	n	%	n	%	n	%	n	%
All Ages										
1998	78,004	95.8	3,114	3.8	288	0.4	3,402	4.2	81,406	100.0
1999	77,473	95.8	3,147	3.9	246	0.3	3,393	4.2	80,866	100.0
2000	78,075	95.7	3,263	4.0	244	0.3	3,507	4.3	81,582	100.0
2001	77,409	95.6	3,371	4.2	234	0.3	3,605	4.4	81,014	100.0
2002	76,673	95.1	3,708	4.6	243	0.3	3,951	4.9	80,624	100.0
2003	76,367	95.3	3,551	4.4	249	0.3	3,800	4.7	80,167	100.0
2004	74,677	95.2	3,538	4.5	245	0.3	3,783	4.8	78,460	100.0
2005	73,258	95.4	3,375	4.4	190	0.2	3,565	4.6	76,824	100.0
2006	74,146	95.5	3,375	4.3	149	0.2	3,524	4.5	77,670	100.0
2007	74,498	95.6	3,310	4.2	126	0.2	3,436	4.4	77,934	100.0
2008	73,475	95.5	3,365	4.4	129	0.2	3,494	4.5	76,969	100.0
2009	71,423	95.3	3,386	4.5	157	0.2	3,543	4.7	74,966	100.0
2010	69,508	95.4	3,220	4.4	107	0.1	3,327	4.6	72,835	100.0
2011	69,933	95.6	3,135	4.3	100	0.1	3,235	4.4	73,169	100.0
2012	69,272	95.6	3,093	4.3	90	0.1	3,183	4.4	72,457	100.0
Ages <35										
1998	62,719	96.4	2,193	3.4	170	0.3	2,363	3.6	65,082	100.0
1999	61,816	96.4	2,147	3.3	150	0.2	2,297	3.6	64,113	100.0
2000	61,659	96.4	2,205	3.4	130	0.2	2,335	3.6	63,994	100.0
2001	60,704	96.3	2,211	3.5	134	0.2	2,345	3.7	63,049	100.0
2002	59,736	96.0	2,379	3.8	127	0.2	2,506	4.0	62,242	100.0
2003	59,347	95.9	2,389	3.9	118	0.2	2,507	4.1	61,854	100.0
2004	57,618	96.0	2,229	3.7	142	0.2	2,371	4.0	59,989	100.0
2005	56,380	96.3	2,086	3.6	102	0.2	2,188	3.7	58,569	100.0
2006	57,237	96.3	2,116	3.6	89	0.1	2,205	3.7	59,442	100.0
2007	57,977	96.3	2,144	3.6	87	0.1	2,231	3.7	60,208	100.0
2008	57,080	96.3	2,111	3.6	78	0.1	2,189	3.7	59,269	100.0
2009	55,906	96.1	2,202	3.8	80	0.1	2,282	3.9	58,188	100.0
2010	54,369	96.3	2,018	3.6	58	0.1	2,076	3.7	56,445	100.0
2011	54,837	96.4	2,014	3.5	59	0.1	2,073	3.6	56,910	100.0
2012	54,069	96.4	1,961	3.5	57	0.1	2,018	3.6	56,089	100.0
Ages 35+										
1998	15,282	93.6	921	5.6	118	0.7	1,039	6.4	16,321	100.0
1999	15,657	93.5	1,000	6.0	96	0.6	1,096	6.5	16,753	100.0
2000	16,412	93.3	1,058	6.0	114	0.6	1,172	6.7	17,584	100.0
2001	16,703	93.0	1,160	6.5	100	0.6	1,260	7.0	17,963	100.0
2002	16,936	92.1	1,329	7.2	116	0.6	1,445	7.9	18,381	100.0
2003	17,015	92.9	1,162	6.3	131	0.7	1,293	7.1	18,308	100.0
2004	17,055	92.4	1,309	7.1	103	0.6	1,412	7.6	18,467	100.0
2005	16,874	92.5	1,289	7.1	88	0.5	1,377	7.5	18,251	100.0
2006	16,901	92.8	1,257	6.9	60	0.3	1,317	7.2	18,218	100.0
2007	16,519	93.2	1,166	6.6	39	0.2	1,205	6.8	17,724	100.0
2008	16,392	92.6	1,254	7.1	51	0.3	1,305	7.4	17,697	100.0
2009	15,513	92.5	1,184	7.1	77	0.5	1,261	7.5	16,774	100.0
2010	15,136	92.4	1,200	7.3	49	0.3	1,249	7.6	16,385	100.0
2011	15,092	92.8	1,121	6.9	41	0.3	1,162	7.1	16,255	100.0
2012	15,202	92.9	1,132	6.9	33	0.2	1,165	7.1	16,367	100.0

1. Numbers of multiples (n) represent individual infants rather than sets of infants. 2. Differences in the number of births from previous publications are the result of updated files.

Table 32. Summary of Selected Teen Birth Characteristics, Massachusetts: 2012

	Ages 15-17		Ages 18-19		Combined Ages 15-19	
	N	%[1]	N	%[1]	N	%[1]
State total	**837**	**26.0%**	**2,382**	**74.0%**	**3,219**	**100.0%**
Maternal Demographics						
Race/Hispanic Ethnicity	**N**	**%[2]**	**N**	**%[2]**	**N**	**%[2]**
White non-Hispanic	279	33.4%	949	40.0%	1,228	38.2%
Black non-Hispanic	100	12.0%	351	14.8%	451	14.0%
Asian	17	2.0%	60	2.5%	77	2.4%
Hispanic	430	51.4%	992	41.8%	1,422	44.3%
Other	10	1.2%	23	1.0%	33	1.0%
Birthplace						
US States / D.C.	635	75.9%	1,859	78.0%	2,494	77.5%
Puerto Rico / US Terr.	89	10.6%	174	7.3%	263	8.2%
Non-US-born	113	13.5%	349	14.7%	462	14.4%
Prenatal care funding						
Public	671	81.6%	1,850	78.9%	2,521	79.6%
Private, other	151	18.4%	494	21.1%	645	20.4%
Pregnancy-Related Factors						
Adequacy of Prenatal Care[3]						
Adequate Total[4]	529	66.8%	1,509	68.2%	2,038	67.8%
Adequate Intensive	262	33.1%	680	30.7%	942	31.3%
Adequate Basic	267	33.7%	829	37.4%	1,096	36.5%
Intermediate	62	7.8%	177	8.0%	239	8.0%
Inadequate/None	143	18.1%	349	15.8%	492	16.4%
Unknown	58	7.3%	179	8.1%	237	7.9%
Parity[5]						
1	784	93.7%	1,975	83.1%	2,759	85.8%
2	49	5.9%	353	14.8%	402	12.5%
3+	4	--[6]	50	2.1%	54	1.7%
Smoking during Pregnancy						
Yes	70	8.7%	334	14.4%	404	12.9%
No	738	91.3%	1,988	85.6%	2,726	87.1%
Birth Outcomes						
Birthweight						
< 500 g	2	--[6]	2	--[6]	4	--[6]
500-1,499 g	13	1.6%	32	1.3%	45	1.4%
1,500-2,499 g	67	8.0%	195	8.2%	262	8.2%
LBW (<2,499 g)	82	9.8%	229	9.6%	311	9.7%
2,500-3,999 g	714	85.4%	2,017	84.9%	2,731	85.0%
4000+ g	40	4.8%	131	5.5%	171	5.3%
Gestational age						
< 28 weeks	7	0.8%	17	0.7%	24	0.8%
Preterm (< 37 weeks)	75	9.0%	219	9.3%	294	9.2%
37-42 weeks	755	91.0%	2,140	90.7%	2,895	90.8%
43+ weeks	0	0.0%	0	0.0%	0	0.0%
Plurality						
Singleton	824	98.4%	2,330	97.8%	3,154	98.0%
Multiple birth	13	1.6%	52	2.2%	65	2.0%

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

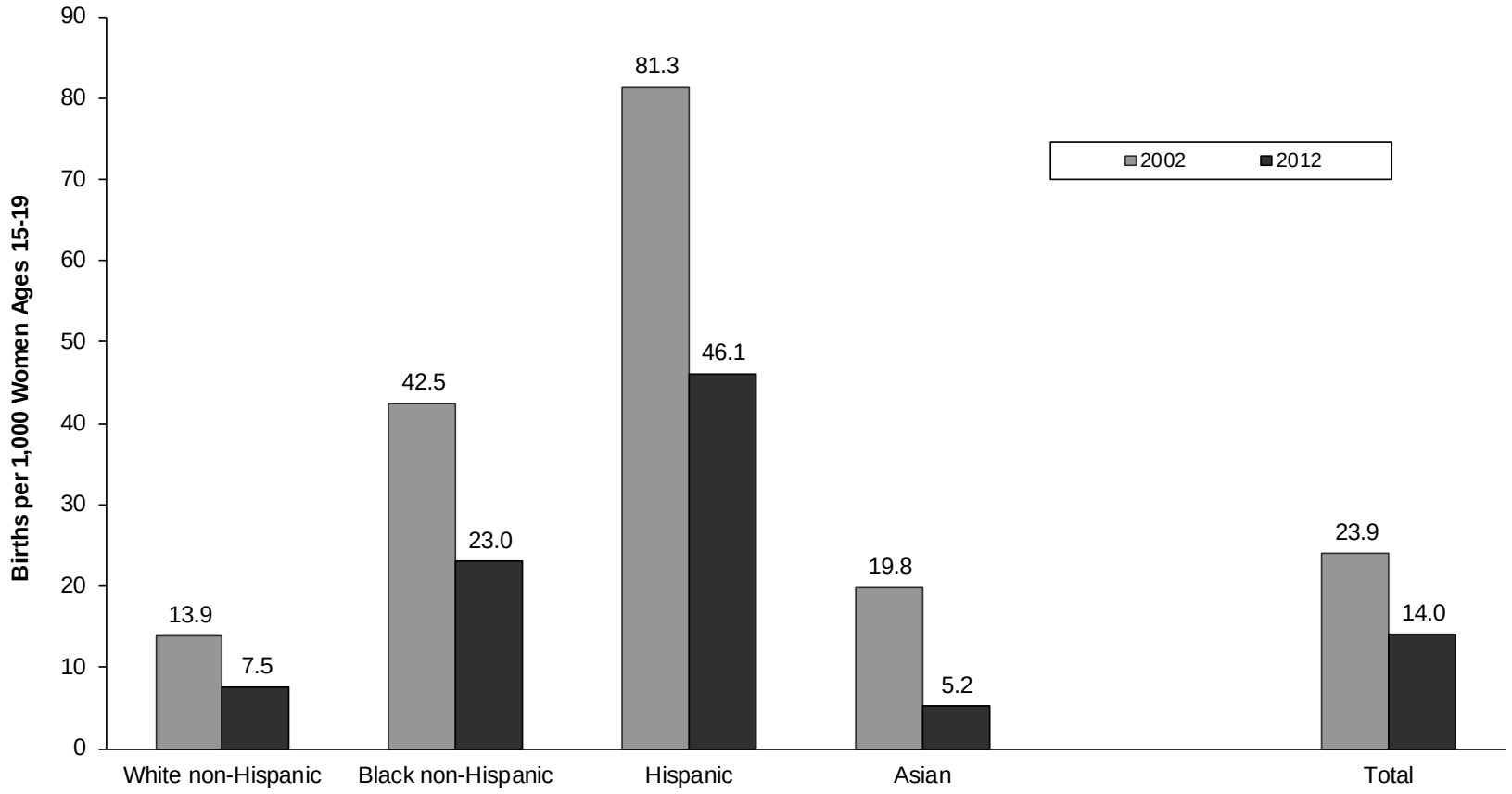
1. For state total row, percentages are based on total births to females ages 15-19. For the rest of the table, percentages are based on births for a given age group and characteristic. 2. Percents are based on state total of the age group. 3. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 4. Adequate Total = Adequate Basic + Adequate Intensive. 5. Number of live births including the current birth. 6. Calculations based on 1-4 events are excluded.

Table 33. Trends in Teen Birth Rates for Selected Communities, Ranked by 2012 Teen Birth Rate, Massachusetts: 2002, 2011, 2012

2012 Rank	Municipality[1]	2002		2011		2012	
		Number of Teen Births	Teen Birth Rate[2]	Number of Teen Births	Teen Birth Rate[2,3]	Number of Teen Births	Teen Birth Rate[2,3]
	State Total	**4,642**	**23.3**	**3,480**	**15.4**	**3,219**	**14.0**
1	HOLYOKE	124	89.2	103	68.3	86	57.1
2	SOUTHBRIDGE	28	52.7	28	49.0	31	54.3
3	LAWRENCE	227	81.4	163	48.0	174	51.3
4	CHELSEA	90	93.3	69	57.6	60	50.1
5	SPRINGFIELD	423	74.5	367	53.7	319	46.7
6	NEW BEDFORD	175	62.4	137	45.1	129	42.5
7	FALL RIVER	158	57.5	115	41.4	101	36.3
8	LYNN	162	55.5	119	36.9	113	35.1
9	LOWELL	228	59.7	151	36.7	130	31.6
10	BROCKTON	163	48.6	121	36.1	105	31.3
11	FITCHBURG	67	45.4	56	31.5	53	29.8
12	CHICOPEE	60	35.5	47	25.0	48	25.5
13	PITTSFIELD	61	47.1	45	33.6	34	25.4
14	MARLBOROUGH	28	32.7	23	22.4	26	25.3
15	WORCESTER	226	33.8	193	25.0	186	24.1
16	TAUNTON	57	36.5	36	20.6	41	23.5
17	HAVERHILL	67	37.5	56	31.3	41	22.9
18	EVERETT	30	29.3	31	23.5	30	22.8
19	LEOMINSTER	39	32.8	27	20.6	27	20.6
20	REVERE	51	47.9	35	24.4	28	19.5
21	FRAMINGHAM	41	21.7	31	13.2	43	18.3
22	ATTLEBORO	32	29.2	24	17.9	24	17.9
23	SALEM	25	20.3	21	13.4	25	15.9
24	SOMERVILLE	50	24.1	26	15.2	25	14.6
25	BOSTON	664	33.5	401	15.4	368	14.2

1. Selected communities include the 25 Massachusetts cities and towns with the highest teen birth rates. Ranking is by 2012 teen birth rate. 2. Rates are per 1,000 females ages 15-19 per city/town. 3. Birth rates for cities and towns were calculated using the Massachusetts Department of Public Health Race Allocated Census 2010 Estimates file (MRACE 2010), which is the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. **Please note**: If the population in your community increased from 2010 to 2012, the rates listed may **overestimate** the actual rate. If the population in your community declined from 2010 to 2012, the rates given in the publication may **underestimate** the actual rate.

Figure 16. Birth Rates among Females Ages 15-19 Years by Mother's Race/Hispanic Ethnicity, Massachusetts: 2002 and 2012



Note: Teen birth rate is number of births to females ages 15-19 per 1,000 females ages 15-19. Birth rates are based upon the 2000 Census population and the National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2010-July 1, 2012, by year, county, single-year of age (0, 1, 2, .., 85 years and over), bridged race, Hispanic origin, and sex (Vintage 2012).

Table 34. Births by Birthweight, Race/Hispanic Ethnicity, Massachusetts: 2012

Birthweight (in grams)	Total		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other		Unknown race/ethnicity	
	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]
State Total	**72,457**	**100.0**	**45,032**	**100.0**	**6,892**	**100.0**	**13,088**	**100.0**	**6,530**	**100.0**	**648**	**100.0**	**267**	**100.0**
<500	81	0.1	32	0.1	17	0.2	23	0.2	7	0.1	1	--[2]	1	--[2]
500-999	320	0.4	172	0.4	56	0.8	70	0.5	19	0.3	3	--[2]	0	0.0
1,000-1,499	477	0.7	270	0.6	64	0.9	103	0.8	33	0.5	6	0.9	1	--[2]
1,500-1,999	1,101	1.5	623	1.4	159	2.3	220	1.7	78	1.2	17	2.6	4	--[2]
2,000-2,499	3,512	4.9	1,979	4.4	409	5.9	693	5.3	369	5.7	45	7.0	17	10.3
2,500-2,999	11,745	16.2	6,448	14.3	1,359	19.7	2,325	17.8	1,465	22.4	118	18.2	30	18.2
3,000-3,499	26,952	37.3	16,098	35.8	2,641	38.4	5,208	39.8	2,720	41.7	231	35.7	54	32.7
3,500-3,999	21,061	29.1	14,214	31.6	1,701	24.7	3,443	26.3	1,478	22.6	179	27.7	46	27.9
4,000-4,499	6,106	8.4	4,447	9.9	420	6.1	871	6.7	314	4.8	44	6.8	10	6.1
4,500-4,999	867	1.2	664	1.5	52	0.8	106	0.8	42	0.6	2	--[2]	1	--[2]
>=5,000	78	0.1	56	0.1	7	0.1	12	0.1	1	--[2]	1	--[2]	1	--[2]
Unknown birthweight	157	0.2	29	0.1	7	0.1	14	0.1	4	--[2]	1	--[2]	102	38.2
VLBW[3] (0-1,499 g)	878	1.2	474	1.1	137	2.0	196	1.5	59	0.9	10	1.5	2	--[2]
LBW[4] (0-2,499 g)	5,491	7.6	3,076	6.8	705	10.2	1,109	8.5	506	7.8	72	11.1	23	13.9

NOTE: Percentages for detailed birthweight rows ("<500" through "Unknown birthweight") are calculated based on births including those with unknown birthweight. Percentages for VLBW and LBW rows are calculated based on births with known birthweight only.

1. Percentages are based on column totals. 2. Calculations based on values of 1-4 are excluded. 3. Very Low Birthweight (VLBW): less than 1,500 grams (3.3 lbs.).
4. Low Birthweight (LBW): less than 2,500 grams (5.5 lbs.).

Table 35. Low Birthweight by Plurality and Maternal Age, Massachusetts: 2002-2012

Age Group (years)	Year	Singleton				Multiples												Total Births			
						Twin				Triplets or more				Total Multiples							
		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]		VLBW[1]		LBW[2]	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
All Ages	2002	699	0.9	3,972	5.2	342	9.2	1,855	50.2	68	28.0	233	95.9	410	10.4	2,088	53.0	1,109	1.4	6,060	7.5
	2003	713	0.9	4,006	5.3	331	9.3	1,877	52.9	71	28.5	232	93.2	402	10.6	2,109	55.6	1,115	1.4	6,115	7.6
	2004	740	1.0	4,015	5.4	324	9.2	1,879	53.2	84	34.4	231	94.7	408	10.8	2,110	55.9	1,148	1.5	6,125	7.8
	2005	701	1.0	4,126	5.6	322	9.5	1,765	52.3	75	39.5	181	95.3	397	11.1	1,946	54.6	1,098	1.4	6,072	7.9
	2006	687	0.9	4,264	5.8	308	9.1	1,746	51.8	46	31.1	140	94.6	354	10.1	1,886	53.6	1,041	1.3	6,150	7.9
	2007	693	0.9	4,258	5.7	306	9.2	1,772	53.6	54	42.9	117	92.9	360	10.5	1,889	55.0	1,053	1.4	6,147	7.9
	2008	627	0.9	4,039	5.5	324	9.7	1,803	53.8	55	42.6	113	87.6	379	10.9	1,916	55.1	1,006	1.3	5,955	7.8
	2009	677	1.0	3,886	5.5	276	8.2	1,771	52.7	61	38.9	147	93.6	337	9.6	1,918	54.5	1,014	1.4	5,804	7.8
	2010	643	0.9	3882	5.6	288	8.9	1668	51.8	30	28.8	100	96.2	318	9.6	1768	53.2	961	1.3	5650	7.8
	2011	629	0.9	3824	5.6	286	9.2	1541	49.8	41	41.0	93	93.0	327	10.2	1634	51.2	956	1.3	5458	7.6
	2012	585	0.8	3810	5.5	252	8.2	1592	51.6	41	45.6	89	98.9	300	7.5	1731	43.5	878	1.2	5491	7.6
Ages < 35	2002	537	0.9	3,129	5.2	237	10.0	1,229	51.9	42	33.1	125	98.4	279	11.2	1,354	54.2	816	1.3	4,483	7.2
	2003	539	0.9	3,161	5.3	256	10.7	1,325	55.5	38	32.2	114	96.6	294	11.7	1,439	57.5	833	1.3	4,600	7.5
	2004	565	1.0	3,128	5.4	207	9.3	1,224	55.0	56	39.7	133	94.3	263	11.1	1,357	57.3	828	1.4	4,485	7.5
	2005	552	1.0	3,198	5.7	215	10.3	1,149	55.1	47	46.1	100	98.0	262	12.0	1,249	57.1	814	1.4	4,447	7.6
	2006	534	0.9	3,342	5.8	217	10.3	1,157	54.8	28	31.5	83	93.3	245	11.1	1,240	56.3	779	1.3	4,582	7.7
	2007	533	0.9	3,317	5.7	223	10.4	1,191	55.6	45	51.7	85	97.7	268	12.0	1,276	57.2	801	1.3	4,593	7.6
	2008	492	0.9	3,134	5.5	218	10.4	1,181	56.2	34	43.6	70	89.7	252	11.6	1,251	57.4	744	1.3	4,385	7.4
	2009	525	0.9	3,093	5.6	174	7.9	1,187	54.2	36	45.0	76	95.0	210	9.2	1,263	55.6	735	1.3	4,356	7.5
	2010	489	0.9	3071	5.7	206	10.2	1059	52.5	22	40.0	51	92.7	228	11.0	1110	53.5	717	1.3	4181	7.4
	2011	475	0.9	2964	5.5	189	9.5	1034	52.0	31	52.5	54	91.5	220	10.8	1088	53.2	695	1.2	4052	7.2
	2012	437	0.8	2964	5.5	185	9.5	1066	54.6	34	59.6	57	100	226	8.4	1168	43.5	656	1.2	4087	7.3
Ages 35+	2002	161	1.0	842	5.0	105	7.9	626	47.1	26	22.4	108	93.1	131	9.1	734	50.8	292	1.6	1,576	8.6
	2003	174	1.0	844	5.0	75	6.5	552	47.5	33	25.2	118	90.1	108	8.4	670	51.9	282	1.5	1,514	8.3
	2004	174	1.0	886	5.2	117	9.0	655	50.2	28	27.2	98	95.1	145	10.3	753	53.5	319	1.7	1,639	8.9
	2005	149	0.9	927	5.5	107	8.3	616	47.8	28	31.8	81	92.0	135	9.8	697	50.6	284	1.6	1,624	8.9
	2006	151	0.9	919	5.4	89	7.1	587	46.8	18	30.5	57	96.6	107	8.1	644	49.0	258	1.4	1,563	8.6
	2007	160	1.0	941	5.7	83	7.1	581	49.8	9	23.1	32	82.1	92	7.6	613	50.9	252	1.4	1,554	8.8
	2008	135	0.8	905	5.6	106	8.5	622	49.8	21	41.2	43	84.3	127	9.8	665	51.2	262	1.5	1,570	8.9
	2009	152	1.0	792	5.1	102	8.7	584	49.9	25	32.5	71	92.2	127	10.2	655	52.5	279	1.7	1,447	8.7
	2010	154	1.0	810	5.4	82	6.8	609	50.8	8	16.3	49	100.0	90	7.2	658	52.8	244	1.5	1468	9.0
	2011	154	1.0	860	5.8	97	8.8	507	45.9	10	24.4	39	95.1	107	9.3	546	47.6	261	1.6	1406	8.8
	2012	148	1	846	5.6	67	5.9	526	46.5	7	21.2	32	97	74	5.7	563	43.5	222	1.4	1404	8.6

NOTE: Very Low Birthweight (VLBW) births are a subset of Low Birthweight (LBW) births. All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. 1. Very Low Birthweight (VLBW): less than 1,500 grams (3.3 lbs.). 2. Low Birthweight (LBW): less than 2,500 grams (5.5 lbs.).

Table 36. Births by Gestational Age, Race/Hispanic Ethnicity, Massachusetts: 2012

Gestational Age[1] (weeks completed)	Total		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[3]		Unknown
	n	%[2]	n	%[2]	n	%[2]	n	%[2]	n	%[2]	n	%[2]	n
State Total	**71,127**	**100.0**	**44,003**	**100.0**	**6,852**	**100.0**	**13,018**	**100.0**	**6,485**	**100.0**	**619**	**100.0**	**150**
<20	57	0.1	33	0.1	14	0.2	7	0.1	3	--[4]	0	0.0	0
20-23	106	0.1	42	0.1	16	0.2	38	0.3	7	0.1	2	--[4]	1
24-27	278	0.4	145	0.3	50	0.7	64	0.5	18	0.3	1	--[4]	0
28-31	520	0.7	298	0.7	76	1.1	104	0.8	35	0.5	6	1.0	1
32-33	724	1.0	420	1.0	99	1.4	140	1.1	55	0.8	7	1.1	3
34-36	4,422	6.2	2,691	6.1	434	6.3	847	6.5	399	6.2	37	6.0	14
37-38	15,309	21.5	8,888	20.2	1,559	22.8	3,043	23.4	1,644	25.4	142	22.9	33
39	23,995	33.7	14,890	33.8	2,180	31.8	4,343	33.4	2,324	35.8	204	33.0	54
40	17,925	25.2	11,386	25.9	1,651	24.1	3,185	24.5	1,525	23.5	149	24.1	29
41	7,412	10.4	4,957	11.3	739	10.8	1,185	9.1	453	7.0	64	10.3	14
42	369	0.5	247	0.6	32	0.5	60	0.5	22	0.3	7	1.1	1
43	10	0.0	6	0.0	2	--[4]	2	--[4]	0	0.0	0	0.0	0
44+	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Preterm[5] (<37)	**6,107**	**8.6**	**3,629**	**8.2**	**689**	**10.1**	**1,200**	**9.2**	**517**	**8.0**	**53**	**8.6**	**19**
Very Early[6] (<28)	441	0.6	220	0.5	80	1.2	109	0.8	28	0.4	3	--[4]	1
(28-33)	1,244	1.7	718	1.6	175	2.6	244	1.9	90	1.4	13	2.1	4
Late (34-36)	4,422	6.2	2,691	6.1	434	6.3	847	6.5	399	6.2	37	6.0	14
Term (>=37)	**65,020**	**91.4**	**40,374**	**91.8**	**6,163**	**89.9**	**11,818**	**90.8**	**5,968**	**92.0**	**566**	**91.4**	**131**
Early Term (37-38)	15,309	21.5	8,888	20.2	1,559	22.8	3,043	23.4	1,644	25.4	142	22.9	33
(39-41)	49,332	69.4	31,233	71.0	4,570	66.7	8,713	66.9	4,302	66.3	417	67.4	97
(>=42)	379	0.5	253	0.6	34	0.5	62	0.5	22	0.3	7	1.1	1
Unknown[7]	1,330		1,029		40		70		45		29		117

NOTE: Percentages are calculated based on births with known gestational age only.

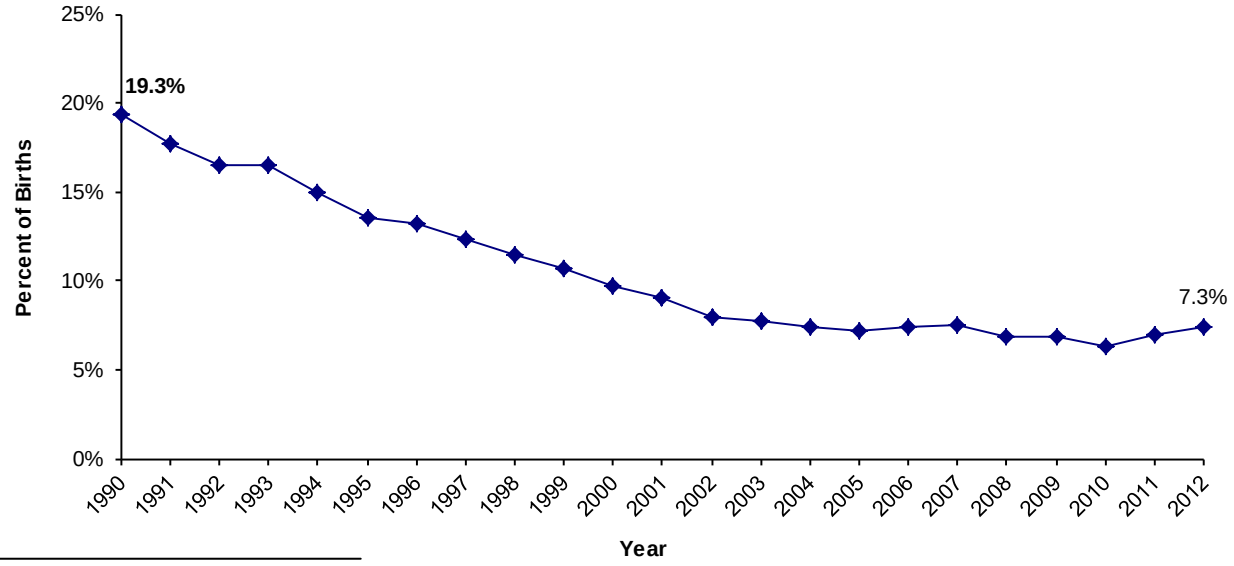
1. A clinical estimate of the number of weeks of pregnancy completed; as estimated by the attendant at birth or the postnatal physician. 2. Percentages are based on column total. 3. Other races include American Indian and others not specified. 4. Calculations based on values of 1-4 are excluded. 5. Also known as early gestational age, premature delivery, or preterm delivery. 6. Also known as extremely premature delivery, or extremely preterm delivery. 7. Estimate of gestational age not provided and excluded from percentage calculations.

Table 37. Percent Preterm and Term Births by Gestational Age Category, Massachusetts: 1999-2012

	Preterm			Term[1]	
Year	very early preterm (<28 wks)	moderate preterm (28-33 wks)	late preterm (34-36 wks)	early term (37-38 wks)	full term (37+ wks)
1999	0.6	1.9	5.2	17.1	92.4
2000	0.6	2.0	5.7	18.7	91.7
2001	0.6	1.9	5.5	18.8	92.0
2002	0.6	1.9	5.9	20.0	91.5
2003	0.7	2.1	6.0	20.8	91.3
2004	0.6	2.2	6.4	22.3	90.8
2005	0.6	2.1	6.3	22.3	91.0
2006	0.6	2.0	6.3	22.7	91.0
2007	0.6	2.0	6.4	22.6	91.0
2008	0.6	2.0	6.2	22.6	91.2
2009	0.7	1.9	6.2	20.8	91.3
2010	0.6	2.0	6.0	21.1	91.4
2011	0.6	1.9	5.9	21.8	91.6
2012	0.6	1.8	6.2	21.5	91.4

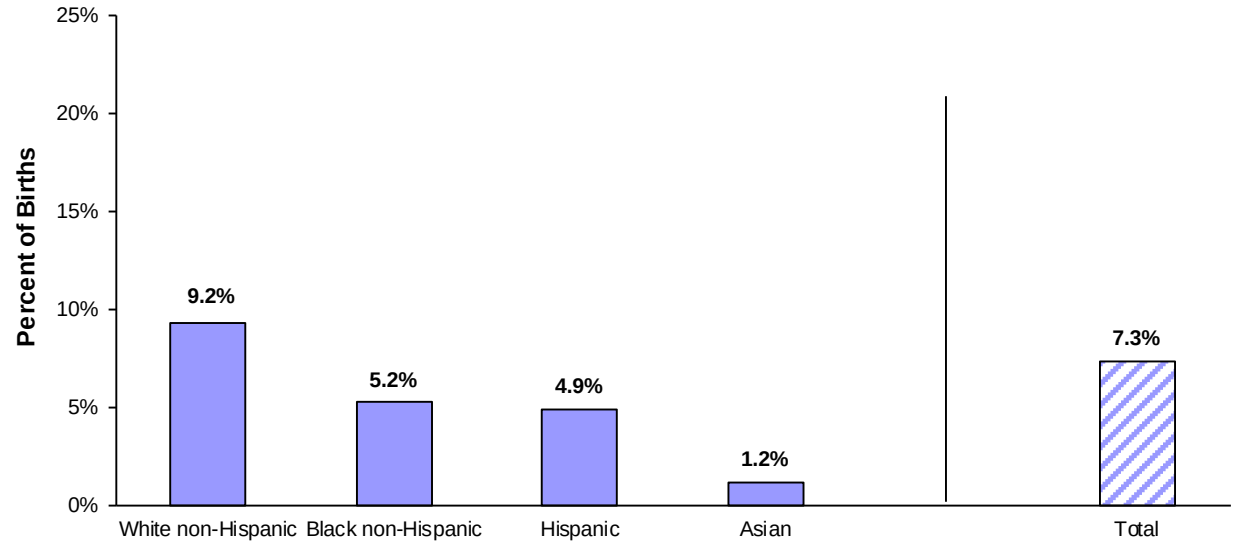
1. Also known as early gestational age, premature delivery, or preterm delivery. Preterm: <37 weeks gestation. 2. Full term and early term are not mutually exclusive.

Figure 17. Percent of Mothers who Reported Smoking during Pregnancy Massachusetts: 1990-2012



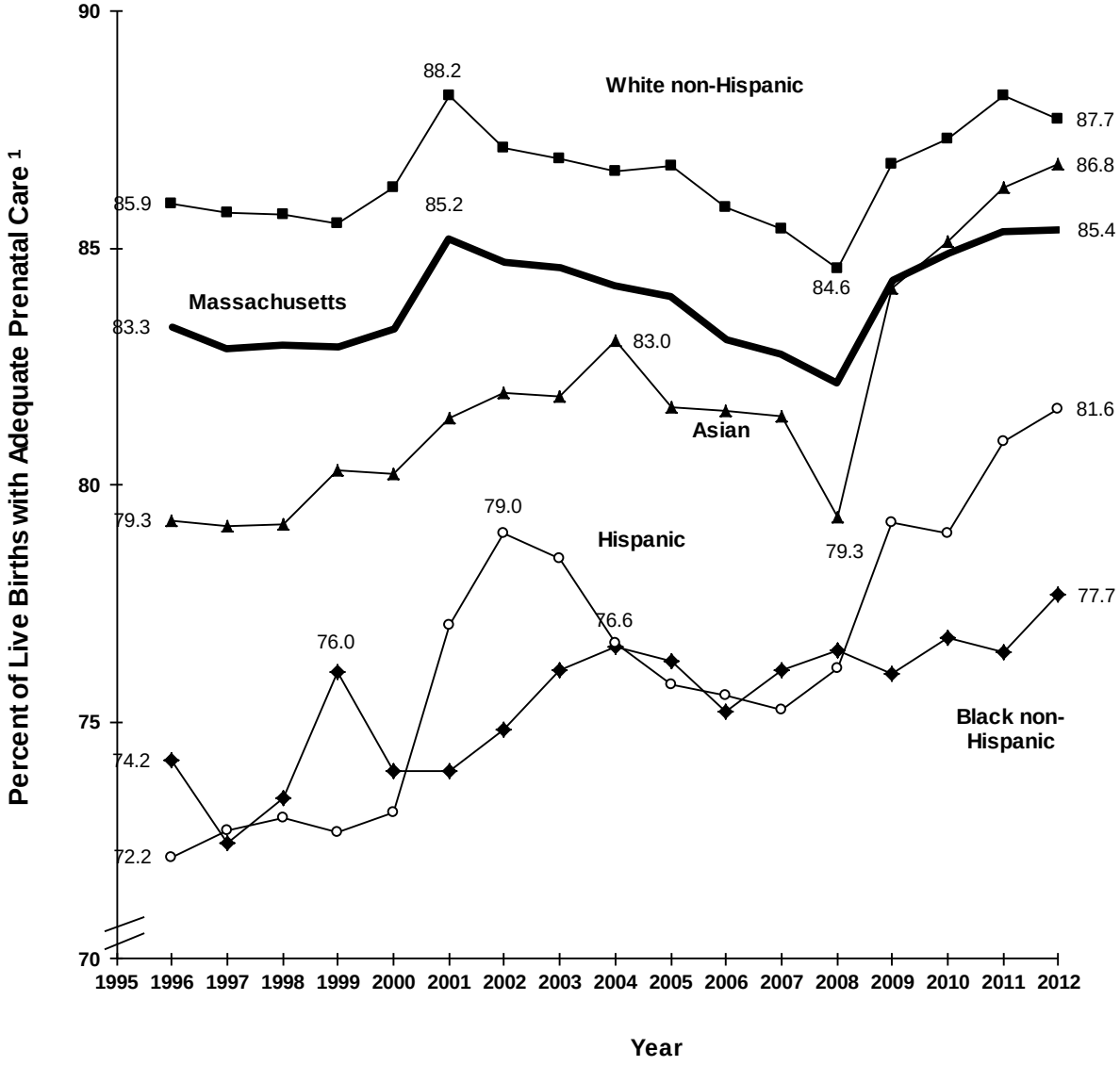
Note: Smoking information is provided on the birth certificate as reported by the mother. Due to self-reported nature, data on smoking prevalence should be interpreted cautiously.

Figure 18. Percent of Mothers who Reported Smoking during Pregnancy by Mother's Race/Hispanic Ethnicity, Massachusetts: 2012



NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated. Asian data should be interpreted with caution because of small numbers. Smoking information is provided on the birth certificate as reported by the mother. Due to self-reported nature, data on smoking prevalence should be interpreted cautiously.

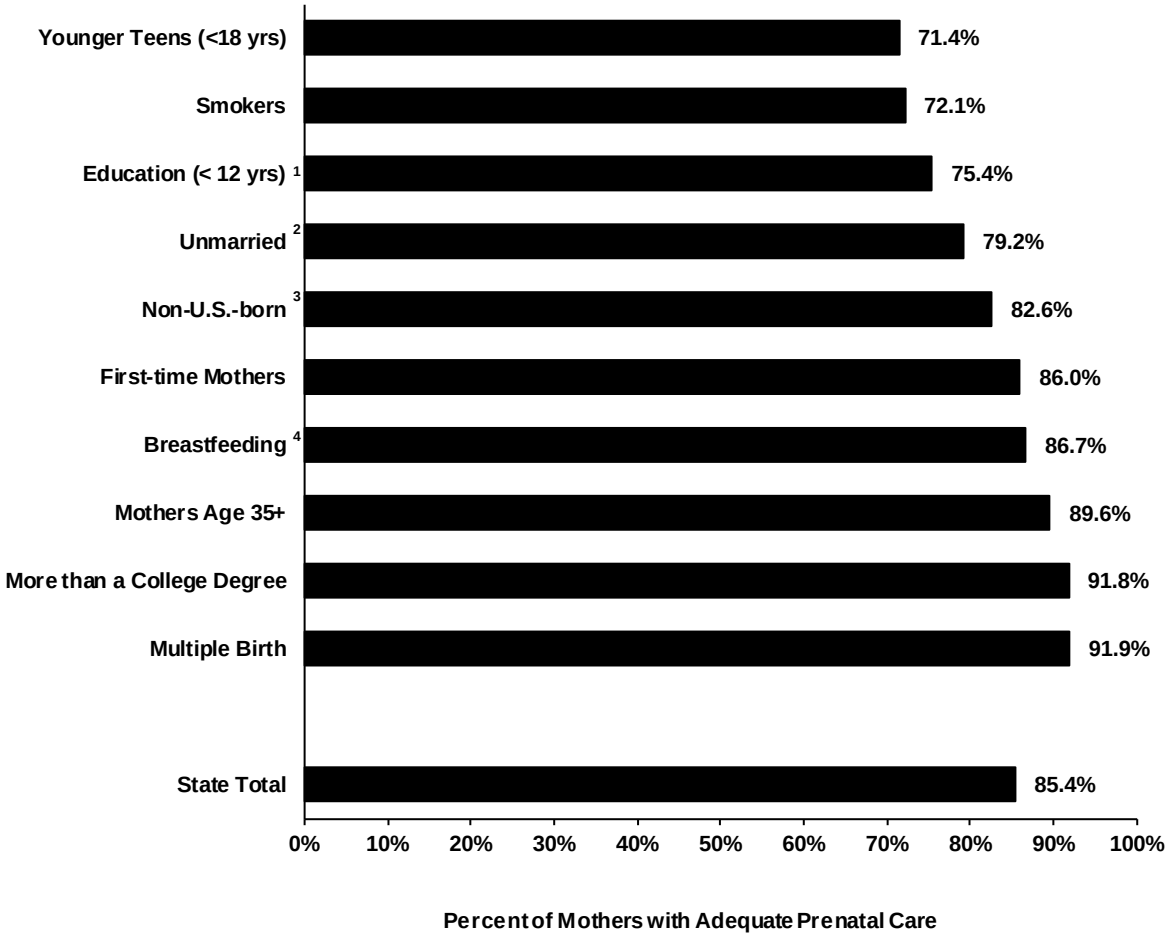
Figure 19. Trends in Adequacy of Prenatal Care by Race and Hispanic Ethnicity, Massachusetts: 1996-2012



PLEASE NOTE THAT FOR PURPOSES OF VISUAL REPRESENTATION THE VERTICAL SCALE OF GRAPH REPRESENTS A SMALL INTERVAL (from 70% to 90%).

1. All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
Please note that the Adequacy of Prenatal Care Utilization (APNCU) Index is an assessment of the timing and number of prenatal care visits and not an evaluation of the quality of care delivered. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.

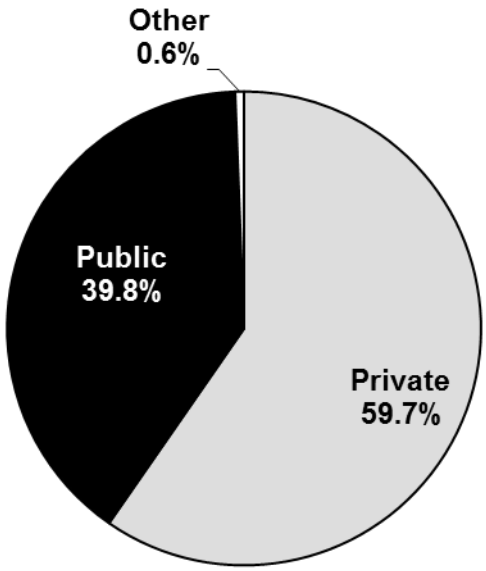
Figure 20. Adequacy of Prenatal Care by Selected Maternal Characteristics, Massachusetts: 2012



NOTE: All percentages are calculated based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. Characteristics of interest are not mutually exclusive, except as noted.

1. Women 20 years of age and older. 2. Marital status at time of birth. 3. Non-US-born includes women born outside of the 50 U.S. states, District of Columbia, and U.S. territories (Puerto Rico, U.S. Virgin Islands, Guam). 4. Infant was being breastfed at time of discharge.

Figure 21. Distribution of Prenatal Care Payment Source, Massachusetts: 2012



NOTE: Sources of Prenatal Care Payment include private: Commercial indemnity plan, commercial managed care (HMO, PPO, IPP, IPA, and other), or other private insurance; public: Government programs including CommonHealth, Healthy Start, Medicaid/MassHealth, and Medicare (may also be HMO or managed care), or free care; and other: self-pay.

Table 38. Trends in Infant, Neonatal, and Post Neonatal Mortality by Race/Hispanic Ethnicity, Massachusetts: 1994-2012

INFANT MORTALITY (less than one year of age)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[2]	
Year	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]
1994	499	6.0	343	5.3	79	12.6	64	7.6	8	2.4	5	5.3
1995	419	5.1	275	4.4	65	11.1	58	7.2	19	5.5	2	--[4]
1996	403	5.0	289	4.7	63	11.4	40	5.1	8	2.2	2	--[4]
1997	425	5.3	294	4.8	64	11.7	55	6.7	10	2.6	2	--[4]
1998	414	5.1	287	4.6	59	10.6	58	6.7	10	2.7	0	0.0
1999	418	5.2	285	4.7	72	12.3	49	5.5	8	1.9	4	--[4]
2000	377	4.6	232	3.8	74	12.8	48	5.2	19	4.1	4	--[4]
2001	407	5.0	245	4.1	71	12.1	69	7.3	15	3.1	7	4.1
2002	397	4.9	239	4.1	69	11.6	67	7.0	16	3.0	6	3.8
2003	383	4.8	235	4.1	75	12.7	55	5.6	14	2.7	4	--[4]
2004	376	4.8	210	3.8	70	11.5	75	7.6	15	2.7	6	3.5
2005	391	5.1	230	4.3	57	9.4	78	7.7	18	3.4	8	4.3
2006	369	4.8	221	4.2	72	11.1	62	5.8	10	1.8	3	--[4]
2007	380	4.9	206	3.9	66	10.2	81	7.4	18	3.1	4	--[4]
2008	382	5.0	194	3.7	78	11.7	86	7.9	16	2.7	8	5.1
2009	366	4.9	205	4.1	54	7.8	78	7.1	20	3.4	9	7.8
2010	319	4.4	163	3.4	56	8.2	65	6.1	25	4.3	7	6.5
2011	310	4.2	159	3.4	47	6.7	75	5.8	22	3.6	6	2.1
2012	309	4.3	158	3.5	57	8.2	71	5.4	17	2.6	4	--[4]

NEONATAL MORTALITY (birth to 27 days)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[2]	
Year	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]	n	Rate[3]
1994	349	4.2	240	3.7	58	9.3	40	4.7	7	2.1	4	--[4]
1995	298	3.6	198	3.1	50	8.5	39	4.8	10	2.9	1	--[4]
1996	290	3.6	222	3.6	34	6.2	27	3.5	5	1.4	1	--[4]
1997	323	4.0	228	3.7	44	8.0	43	5.2	7	1.8	1	--[4]
1998	315	3.9	218	3.5	47	8.5	43	5.0	7	1.9	0	0.0
1999	332	4.1	226	3.7	58	9.9	39	4.4	5	1.2	4	--[4]
2000	288	3.5	177	2.9	57	9.9	37	4.0	14	3.0	3	--[4]
2001	308	3.8	190	3.2	56	9.5	49	5.2	10	2.1	3	--[4]
2002	299	3.7	185	3.2	49	8.2	50	5.2	13	2.4	2	--[4]
2003	285	3.6	179	3.1	56	9.5	38	3.9	10	1.9	2	--[4]
2004	291	3.7	167	3.0	51	8.4	57	5.8	12	2.2	4	--[4]
2005	282	3.7	168	3.1	40	6.6	57	5.8	11	2.1	5	2.7
2006	279	3.6	173	3.3	53	8.2	42	3.9	7	1.3	3	--[4]
2007	263	3.4	141	2.7	48	7.4	53	4.9	15	2.6	4	--[4]
2008	291	3.8	153	3.0	57	8.6	65	6.0	10	1.7	6	3.8
2009	276	3.7	162	3.2	36	5.2	54	4.9	17	2.9	7	6.0
2010	238	3.3	121	2.5	43	6.3	47	4.4	20	3.4	5	4.6
2011	230	3.1	112	2.4	33	4.7	60	4.7	19	3.1	5	1.7
2012	216	3.0	111	2.5	41	5.9	46	3.5	13	2.0	3	--[4]

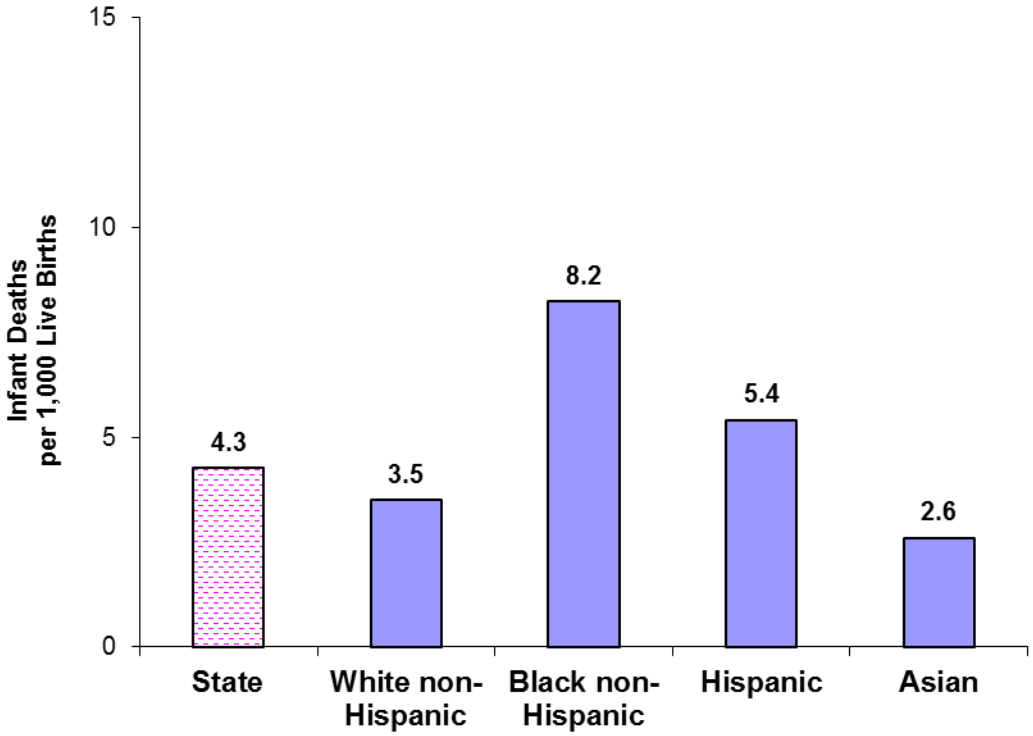
Table 38 (cont'd). Trends in Infant, Neonatal, and Post Neonatal Mortality by Race/Hispanic Ethnicity, Massachusetts: 1994-2012

POST NEONATAL MORTALITY (28-364 days)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian		Other[2]	
Year	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**	**n**	**Rate[3]**
1994	150	1.8	103	1.6	21	3.3	24	2.8	1	--[4]	1	--[4]
1995	121	1.5	77	1.2	15	2.6	19	2.3	9	2.6	1	--[4]
1996	113	1.4	67	1.1	29	5.3	13	1.7	3	--[4]	1	--[4]
1997	102	1.3	66	1.1	20	3.7	12	1.5	3	--[4]	1	--[4]
1998	99	1.2	69	1.1	12	2.2	15	1.7	3	--[4]	0	0.0
1999	86	1.1	59	1.0	14	2.4	10	1.1	3	--[4]	0	0.0
2000	89	1.1	55	0.9	17	2.9	11	1.2	5	1.1	1	--[4]
2001	99	1.2	55	0.9	15	2.6	20	2.1	5	1.0	4	--[4]
2002	98	1.2	54	0.9	20	3.4	17	1.8	3	--[4]	4	--[4]
2003	98	1.2	56	1.0	19	3.2	17	1.7	4	--[4]	2	--[4]
2004	85	1.1	43	0.8	19	3.1	18	1.8	3	--[4]	2	--[4]
2005	109	1.4	62	1.2	17	2.8	20	2.0	7	1.3	3	--[4]
2006	90	1.2	48	0.9	19	2.9	20	1.9	3	--[4]	0	0.0
2007	117	1.5	65	1.2	18	2.8	28	2.6	3	--[4]	3	--[4]
2008	91	1.2	41	0.8	21	3.2	21	1.9	6	1.0	2	--[4]
2009	90	1.2	43	0.9	18	2.6	24	2.2	3	--[4]	2	--[4]
2010	81	1.1	42	0.9	13	1.9	18	1.7	5	0.9	2	--[4]
2011	80	1.1	47	1.0	14	2.0	15	1.2	3	--[4]	1	--[4]
2012	93	1.3	47	1.0	16	2.3	25	1.9	4	--[4]	1	--[4]

Note that infant deaths are based on the death file as of December 20, 2013.
1. Deaths of infants of unknown race are included in the total calculation. For rate computations, births of infants of unknown race are allocated into the race categories according to the distribution of births of known race. 2. Other: American Indian and Other races. 3. Rates are expressed per 1,000 live births.
4. Calculations based on values of 1-4 are excluded.

Figure 22. Infant Mortality Rates by Race/Hispanic Ethnicity, Massachusetts: 2012



Note that infant deaths are based on the death file as of December 20, 2013.
Rates are expressed per 1,000 live births (males and females).

Table 39. Resident Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2012

Municipality[1]	Rank (by pop. size)	Population	Crude Birth Rate[2]	Mother's Race and Ethnicity: White non-Hispanic %[3]	Mother's Race and Ethnicity: Black non-Hispanic %[3]	Mother's Race and Ethnicity: Hispanic %[3]	Mother's Race and Ethnicity: Asian or Other[4] %[3]	Birth weight: Very Low (<1500 g) %	Birth weight: Low (<2500 g) %	Gestational Diabetes %
STATE TOTAL		**6,646,144**	**11.0**	**62.1**	**9.5**	**18.1**	**9.9**	**1.2**	**7.6**	**5.6**
Arlington	30	42839	14.0	75.8	2.3	5.4	16.6	1.5	9.0	4.3
Attleboro	29	43585	12.6	77.4	4.6	10.6	7.1	1.8	8.4	2.9[L]
Barnstable	27	45185	9.5	70.3	6.6	13.6	9.1	1.2	7.1	1.4[L]
Boston	1	617594	13.0	37.8	26.6	25.5	9.7	1.5	8.4	4.2[L]
Brockton	7	93802	14.4	28.7	53.0	13.4	4.8	1.8	10.2[H]	6.6
Brookline	18	58730	11.7	63.6	1.9	6.6	27.8	--[5]	8.8	3.9
Cambridge	5	105157	12.1	53.4	12.6	9.9	23.6	1.5	8.2	3.9[L]
Chicopee	22	55295	11.4	65.4	5.3	26.6	2.7	1.1	6.9	9.9[H]
Fall River	10	88844	12.3	75.3	8.5	11.5	4.2	0.9	8.3	8.5[H]
Framingham	14	68314	13.3	53.9	5.1	29.8	10.8	0.9	8.0	4.3
Haverhill	15	60876	13.4	69.2	3.6	24.5	2.6	1.0	5.9	6.2
Lawrence	12	76368	17.4	9.9	2.8	84.6	2.7	1.4	8.4	5.5
Lowell	4	106517	15.6	39.3	7.8	21.4	31.4	1.3	8.5	12.0[H]
Lynn	9	90328	16.6	29.2	11.3	49.7	9.7	1.9	9.0	5.8
Malden	17	59447	14.9	34.3	17.4	14.4	33.0	1.1	8.1	6.2
Medford	20	56171	12.2	63.8	9.3	10.1	16.0	1.5	7.0	5.1
Methuen	26	47252	12.0	59.1	3.2	32.3	5.1	2.5[H]	8.6	4.7
New Bedford	6	95071	13.9	54.9	11.5	28.8	4.4	1.4	9.9[H]	5.5
Newton	11	85142	9.5	70.0	3.6	6.3	20.1	0.9	7.4	5.9
Peabody	25	51253	10.0	71.9	3.9	17.5	5.7	--[5]	7.2	6.4
Pittsfield	28	44728	11.8	76.2	9.1	10.8	4.0	1.3	7.5	4.7
Plymouth	19	56455	10.1	89.0	2.1	5.4	3.0	0.9	7.4	6.9
Quincy	8	92275	13.6	45.1	9.0	6.1	39.3	1.3	7.0	6.9
Revere	24	51744	14.2	40.1	7.5	38.5	12.8	2.6[H]	7.2	3.8
Somerville	13	75748	12.9	56.9	7.7	19.9	15.2	0.8	7.8	4.7
Springfield	3	153057	15.6	22.6	18.1	55.1	4.1	1.3	8.8	7.6[H]
Taunton	21	55869	12.4	77.0	10.1	9.1	3.5	1.2	7.8	4.6
Waltham	16	60621	14.6	51.6	8.4	21.8	17.8	--[5]	8.2	4.2
Weymouth	23	53736	11.5	78.4	8.1	5.2	7.8	1.0	6.2	6.2
Worcester	2	181041	14.0	46.8	17.0	27.8	7.9	1.7	7.6	7.8[H]

Table 39 (cont'd). Resident Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2012

Municipality[1]	Births					Deaths			
	Adequate Prenatal Care[6]	Public Payment[7] for Prenatal Care	Unmarried	Teen Mothers 15-19 years		Infant Mortality Rate[9]		Neonatal Mortality Rate[9]	
	%	%	%	n	Rate[8]	2012	2010-2012	2012	2010-2012
STATE TOTAL	**85.4**	**39.7**	**34.5**	**3,219**	**14.0**	**4.3**	**6.5**	**3.0**	**4.7**
Arlington	89.7	6.9 L	8.0 L	--[5]	--[5]	--[5]	4.1	--[5]	--[5]
Attleboro	80.5	36.7	30.3	24	17.9	--[5]	6.5	--[5]	4.7
Barnstable	72.3 L	51.5 H	39.0	24	18.8	--[5]	6.0	--[5]	--[5]
Boston	87.1	47.7 H	42.3 H	368	14.2	4.7	6.9	2.9	5.2
Brockton	77.0 L	66.2 H	54.5 H	105	31.3 H	5.2	9.7	3.7	7.2
Brookline	95.2 H	8.4 L	4.7 L	0	--[5]	--[5]	--[5]	--[5]	--[5]
Cambridge	87.2	17.8 L	12.2 L	14	3.9 L	--[5]	4.8	--[5]	4.0
Chicopee	83.1	55.8 H	52.6 H	48	25.5 H	--[5]	5.6	--[5]	--[5]
Fall River	83.3	72.3 H	64.1 H	101	36.3 H	5.5	6.2	5.5	6.2
Framingham	82.8[10]	42.4	31.0	43	18.3	--[5]	5.3	--[5]	3.7
Haverhill	83.7	47.1 H	42.9 H	41	22.9 H	--[5]	5.5	--[5]	3.7
Lawrence	73.8 L	78.7 H	71.1 H	174	51.3 H	6.0	8.5	4.5	6.3
Lowell	82.5	57.9 H	52.0 H	130	31.6 H	3.6	8.1	3	6.3
Lynn	78.8 L	68.0 H	54.0 H	113	35.1 H	7.3	10.5	6	6.8
Malden	83.7	46.4 H	26.8 L	15	9.7	--[5]	3.3	--[5]	--[5]
Medford	85.2	24.3 L	18.3 L	7	4.2 L	--[5]	3.5	--[5]	--[5]
Methuen	81.9	42.9	35.8	20	12.3	--[5]	6.2	--[5]	--[5]
New Bedford	78.9 L	69.3 H	65.7 H	129	42.5 H	3.8	6.2	3.8	5.0
Newton	84.9[10]	9.0 L	9.2 L	--[5]	--[5]	--[5]	6.3	--[5]	5.0
Peabody	84.8	35.5	30.8	14	10	--[5]	5.0	--[5]	5.0
Pittsfield	74.9 L	59.0 H	56.8 H	34	25.4 H	--[5]	12.5	--[5]	8.7
Plymouth	87.8	31.0 L	32.1	24	14.6	--[5]	--[5]	--[5]	--[5]
Quincy	87.9	37.6	24.4 L	17	8.6	--[5]	4.9	--[5]	3.2
Revere	85.0	58.3 H	37.0	28	19.5	15.0	9.4	12.3	8.1
Somerville	86.8	31.1 L	22.1 L	25	14.6	--[5]	3.7	--[5]	2.6
Springfield	79.1 L	76.0 H	70.8 H	319	46.7 H	3.8	10.5	2.1	5.6
Taunton	75.3 L	44.8	47.0 H	41	23.5 H	--[5]	5.8	--[5]	5.8
Waltham	82.3[10]	29.9 L	22.4 L	13	5.5 L	--[5]	3.6	--[5]	3.0
Weymouth	87.0	32.7 L	26.7 L	13	9	--[5]	8.9	--[5]	4.8
Worcester	71.9 L, 10	60.6 H	49.1 H	186	24.1 H	7.5	9.6	4.7	7.4

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
H = percent or rate is higher than the state total
L = percent or rate is lower than the state total

1. The 30 largest municipalities are the cities/ towns in Massachusetts with the largest populations (See Technical Notes). 2. Crude birth rates represent the number of births per 1,000 residents (male and female). 3. For the category of Mother's Race and Ethnicity, percentages are calculated based on the state total of resident births, including births for which mother's race/Hispanic ethnicity is unknown. 4. Mothers who designated themselves as Asian, American Indian, or Other. 5. Counts and calculations based on 1-4 events are excluded. 6. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary for definition. For the state total, does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 7. Public payment sources include CommonHealth, Healthy Start, Medicaid/MassHealth, and Medicare (may be HMO or managed care), or free care. 8. Births per 1,000 female residents ages 15-19; rates for cities and towns were calculated using MDPH population estimates for 2010. 9. Deaths per 1,000 live births. See Definitions of Rates section in the Glossary for definitions of infant and neonatal mortality rates. 10. Percent should be interpreted with caution, because a large number of births (>10%) occurred at the facilities where reporting problems were noted.

Table 40. Birth Characteristics by Facility/Location, Massachusetts: 2012

Facility[1]	Location	(2) Occurrence Births (n)	(3) Low Birth weight (%)	(4) Public Pay for PNC (%)	(5) Adequate Prenatal Care (%)	Cesarean Deliveries (%)	(6) Early Term (%)	(7) Late preterm (%)
State Total		**72,828**	**7.6**	**39.2**	**85.4**	**31.8**	**21.5**	**6.3**
Anna Jaques Hospital	Newburyport	625	4.6	35.5	88.5	32.8	19.9	3.9
Baystate Franklin Medical Center	Greenfield	465	2.6	56.8	87.9	22.2	17.4	2.6
Baystate Medical Center	Springfield	4,245	10.1	56.1	83.4	31.7	21.0	7.5
Berkshire Medical Center	Pittsfield	704	6.3	49.6	74.0	25.1	15.6	4.7
Beth Israel Deaconess Medical Center	Boston	4,794	10.5	21.6	96.3	34.6	23.2	9.0
Beverly Hospital	Beverly	2,199	5.5	36.5	81.3	30.5	20.7	5.7
Boston Medical Center	Boston	2,498	9.8	86.5	64.6	27.9	26.0	5.9
Brigham and Women's Hospital	Boston	7,784	10.9	27.3	96.2	33.6	23.2	8.2
Brockton Hospital	Brockton	996	6.4	64.8	80.2	37.6	22.4	5.6
Cambridge Birth Center	Cambridge	139	--[9]	12.9	69.1	--[9]	18.7	--[9]
Cambridge Hospital	Cambridge	1,172	3.2	68.6	79.9	22.1	21.1	1.5
Cape Cod Hospital	Barnstable	833	5.2	50.5	73.7	31.7	19.5	4.8
Charlton Memorial Hospital	Fall River	1,522	6.1	59.5	86.8	33.6	16.2	4.8
Cooley Dickinson Hospital	Northampton	853	3.5	29.7	91.4	28.1	15.2	3.9
Emerson Hospital	Concord	1,122	3.8	17.9	86.4	32.5	25.1	6.0
Fairview Hospital	Great Barrington	153	--[9]	32.7	80.4	27.5	22.9	3.3
Falmouth Hospital	Falmouth	468	3.0	47.4	56.7	33.5	20.9	4.7
Good Samaritan Medical Center	Brockton	883	5.5	68.6	66.6	47.7	22.7	5.1
Harrington Memorial Hospital	Southbridge	298	4.0	33.4	88.2	34.9	21.5	4.0
Healthalliance Hospital	Leominster	1,003	4.0	59.7	82.9	24.4	19.7	4.0
Heywood Hospital	Gardner	522	5.2	44.9	76.9	17.0	20.9	4.0
Holy Family Hospital and Medical Center	Methuen	1,029	4.7	42.7	81.0	40.4	16.7	6.4
Holyoke Medical Center	Holyoke	432	5.6	70.6	67.4	25.7	19.0	1.4
Jordan Hospital	Plymouth	674	3.9	35.9	88.5	33.5	17.4	3.6
Lawrence General Hospital	Lawrence	1,468	5.9	70.9	77.7	30.0	21.2	5.6
Lowell General Hospital	Lowell	2,310	5.9	49.1	83.4	31.7	22.2	6.7
Martha's Vineyard Hospital	Oak Bluffs	120	--[9]	57.5	93.7	30.8	19.3	--[9]
Massachusetts General Hospital	Boston	3,720	9.7	29.3	86.9	31.2	21.5	7.3
Melrose-Wakefield Hospital	Melrose	1,031	3.7	33.5	89.4	37.1	16.5	3.8
Mercy Medical Center	Springfield	1,224	4.4	57.8	82.8	23.6	24.1	4.1
Metro West Medical Center	Framingham	909	7.0	54.0	85.9[10]	37.6	26.0	7.3
Milford Regional Medical Center	Milford	892	3.9	34.5	90.0	33.7	23.3	4.6
Morton Hospital	Taunton	467	5.1	41.3	65.5	34.0	23.1	6.0
Mt. Auburn Hospital	Cambridge	2,395	3.8	18.0	89.2	22.1	17.5	3.3
Nantucket Cottage Hospital	Nantucket	136	3.7	52.2	85.9	33.8	14.7	--[9]
Newton-Wellesley Hospital	Newton	4,057	5.1	5.9	74.0[10]	31.7	24.3	6.1
North Adams Regional Hospital	North Adams	235	6.0	58.4	91.5	28.1	23.4	3.8
North Shore Birth Center	Beverly	104	--[9]	22.1	93.3	--[9]	20.2	--[9]

Table 40. Birth Characteristics by Facility/Location, Massachusetts: 2012

Facility[1]	Location	(2) Occurrence Births (n)	(3) Low Birth weight (%)	(4) Public Pay for PNC (%)	(5) Adequate Prenatal Care (%)	Cesarean Deliveries (%)	(6) Early Term (%)	(7) Late preterm (%)
Norwood Hospital	Norwood	481	3.1	29.9	69.2	31.0	23.1	2.1
Saint Vincent Hospital	Worcester	1,900	3.9	37.7	52.8[10]	32.5	19.9	5.5
South Shore Hospital	Weymouth	3,389	6.0	22.7	89.6	39.6	21.2	5.9
St. Elizabeth's Medical Center	Boston	933	15.0	34.7	79.5	36.7	21.7	9.3
St. Luke's Hospital	New Bedford	1,493	7.7	62.7	78.9	37.2	25.1	8.3
Sturdy Memorial Hospital	Attleboro	791	3.2	32.0	77.4	32.1	17.5	3.4
Tobey Hospital	Wareham	444	2.0	48.6	84.0	18.9	16.7	3.6
Tufts Medical Center	Boston	1,215	27.7	43.0	89.8	39.8	21.8	14.7
Umass Memorial Medical Center	Worcester	4,005	11.6	45.7	91.4	27.9	21.4	6.9
Winchester Hospital	Winchester	1,891	5.2	13.6	68.4[10]	36.6	20.6	5.9
Other Hospitals		7	--[9]	--[9]	--[9]	--[9]	--[9]	--[9]
Home, Enroute & Dr. Off.		425	6.1	22.2	67.4	--[9]	19.0	4.4

NOTE: All percentages are calculated based on only those occurrence births with known values for the characteristic(s) of interest.

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth. 2. See Glossary for definition of occurrence births. 3. Less than 2,500 grams (5.5 lbs.) 4. Public payment for prenatal care (PNC) includes Medicaid/MassHealth, CommonHealth, Medicare, Healthy Start, other government programs, and free care. 5. Based on the APNCU Index. 6. Birth at 37 or 38 weeks of gestation. 7. Birth at 34 to 36 weeks of gestation. 8. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 9. Calculations based on 1-4 events are excluded. 10. Percent should be interpreted with caution, as this is a facility that was identified has having reporting problems for prenatal care.

Table 41. Comparison of Massachusetts Perinatal Health Indicators with Healthy People 2020 Objectives, Massachusetts: 2009-2012

Healthy People 2020 Objectives[1] (Focus Area: Maternal, Infant and Child Health MICH[2])	HP2020 Target	Massachusetts 2009	2010	2011	2012	Has Massachusetts achieved HP2020 target? ✓ = YES O = NO, but within 25% of target ● = NO, > 25% from target
Fetal, Infant, and Maternal Deaths						
MICH-1.1. Fetal Mortality Rate[3]	5.6	5.0	4.5	5.0	4.2	√
MICH-1.2. Perinatal Mortality Rate[4]	5.9	5.5	4.9	5.4	4.4	√
MICH-1.3. Infant Mortality Rate[5]	6.0	4.8	4.4	4.2	4.3	√
MICH-1.4. Neonatal Mortality Rate[6]	4.1	3.7	3.3	3.1	3.0	√
MICH-1.5. Postneonatal Mortality Rate[7]	2.0	1.2	1.1	1.1	1.3	√
MICH-5. Maternal Mortality Ratio[8]	11.4	4.0	5.5	9.5	1.4	√
Risk Factors						
MICH-8.1. Low Birthweight[9] (%)	7.8	7.8	7.8	7.6	7.6	√
MICH-8.2. Very Low Birthweight[10] (%)	1.4	1.4	1.3	1.3	1.2	√
MICH-9.1. Preterm[11] (%)	11.4	10.9	10.7	10.5	10.0	√
Prenatal Care						
MICH-10.1. Care beginning in first trimester (%)	77.9	82.6	83.9	83.0	82.1	√
MICH-10.2. Early and adequate care[12] (%)	77.6	84.3	84.9	85.3	85.4	√
Obstetrical Care						
MICH-33. Very Low Birthweight[10] Infants born at Level III Hospitals[13] (%)	82.5	81.1	82.5	82.4	82.7	√
MICH-7.1. Cesarean Sections: Low-Risk[14] Women Giving Birth for the First Time (%)	23.9	28.3	27.6	25.1	24.2	**O**
MICH-7.2. Cesarean Sections: Low-Risk[14] Women with Prior Cesarean Section (%)	81.7	90.4	89.7	89.0	86.8	**O**
Breastfeeding						
MICH-21.1. Breastfeeding[15] (%)	81.9	82.0	82.9	82.5	82.7	√
Prenatal Substance Exposure						
MICH-11.3. Abstinence from Smoking[15] (%)	98.6	93.2	93.7	93.0	92.7	**O**

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. National health promotion and disease prevention agenda established by the US Dept. of Health and Human Services. 2. Goal: to improve the health and well-being of women, infants, children, and families. 3. Number of fetal deaths per 1,000 fetal deaths plus live births. 4. Number of fetal and infant deaths in perinatal period (from 28 weeks gestation (inclusive) to 6 days (inclusive) after birth per 1,000 fetal deaths plus live births. 5. Number of infant deaths (under one year of age) per 1,000 live births. 6. Number of deaths to infants less than 28 days of age per 1,000 live births. 7. Number of deaths to infants 28-364 days of age per 1,000 live births. 8. See Definition of Rates section in Technical Notes. 9. Less than 2,500 grams, or 5.5 pounds. 10. Less than 1,500 grams, or 3.3 pounds. 11. Born before completion of 37th week of gestation. **Note that beginning with the 2010 report, this indicator has been changed to reflect the NCHS method of calculating preterm using LMP**. The values do not match previously published values as well as preterm values published elsewhere in this report. See entry for Gestational Age in the Glossary for further explanation. 12. Based on Adequacy of Prenatal Care Utilization Index (see Glossary). Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 13. Facilities for high-risk deliveries and neonates that can provide care to very small infants, including mechanical ventilation and neonatal surgery and special care for transferred patients and for which a full-time neonatologist serves as the director. 14. "Low-risk"= full term birth, singleton, vertex presentation. 15. HP2020 specifies objective as mother 'ever' breastfeeding. Massachusetts data is based on mother's self-report of whether infant was being breastfed at time of discharge, and of smoking during pregnancy.

Figure 23. Maternal Body Mass Index (BMI) Prior to Pregnancy, Massachusetts: 2012

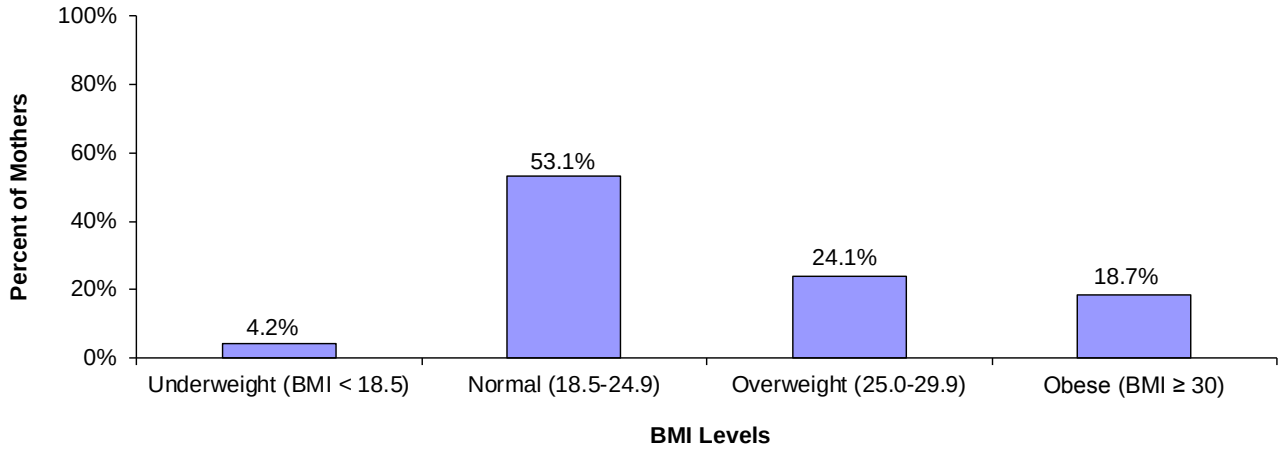
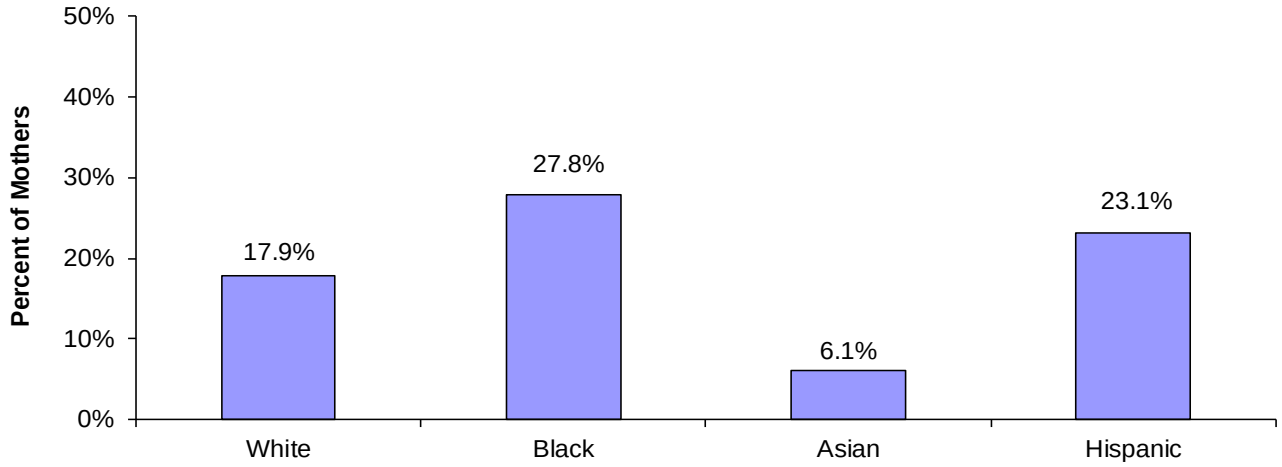


Figure 24. Obesity Prior to Pregnancy by Race and Hispanic Ethnicity, Massachusetts: 2012



Note: These figures are based on mothers in VIP and not births.

Figure 25. Mothers who Reported Having Their Teeth Cleaned During Pregnancy by Race and Hispanic Ethnicity, Massachusetts: 2012

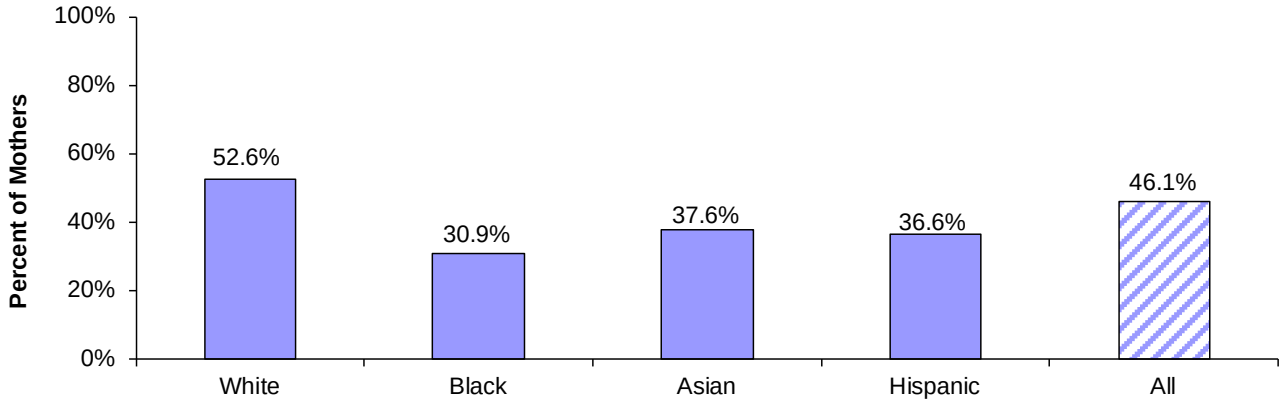
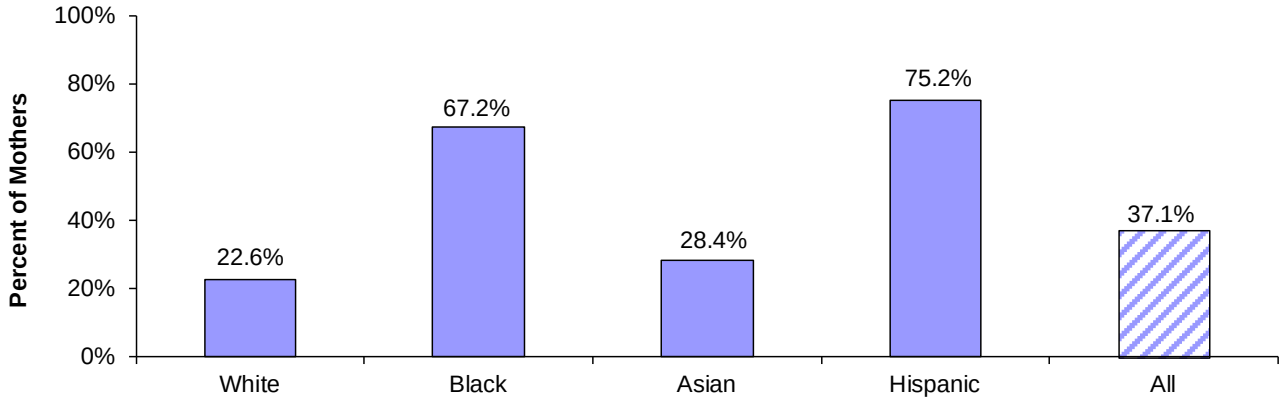


Figure 26. Mothers who Reported Having Received WIC Food During Pregnancy by Race and Hispanic Ethnicity, Massachusetts: 2012



Note: These figures are based on mothers in VIP and not births

Table 42. Selected Birth Characteristics by Maternal Education, Massachusetts: 2012

	Less than High School		High School		Some College		Associate Degree		Bachelor's Degree		More than College	
	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]	n	%[1]
State total	**7,625**	**11.2**	**13,170**	**19.4**	**10,137**	**14.9**	**4,822**	**7.1**	**17,258**	**25.4**	**14,936**	**22.0**
Race												
White non-Hispanic	2,085	5.3	6,631	15.5	6,010	14.1	3,272	7.7	13,206	30.9	11,496	26.9
Black non-Hispanic	918	16.2	1,827	29.1	1,440	22.9	623	9.9	1,026	16.3	454	7.2
Hispanic	3,953	34.9	3,751	31.5	2,019	17.0	574	4.8	1,011	8.5	597	5.0
Asian	592	9.7	797	12.5	543	8.5	284	4.5	1,850	29.0	2,305	36.2
Age (years)												
20-29	3,845	15.7	7,572	28.7	5,805	22.0	1,919	7.3	4,914	18.6	2,309	8.8
30-39	1,976	6.0	4,078	11.5	3,699	10.5	2,673	7.6	11,347	32.1	11,580	32.8
40+	189	6.2	337	11.0	288	9.4	217	7.1	993	32.3	1,046	34.1
Non-US-born[2]	3,494	45.8	4,201	31.9	2,281	22.5	1,214	25	4,092	23.7	4,034	27.0
Unmarried	5,421	71.3	8,068	61.6	5,224	51.8	1,422	30	1,914	11.1	677	4.5
Publicly financed prenatal care	6,670	88.7	9,271	71.7	5,358	54.4	1,516	33	2,322	14	716	4.8
Very low birthweight[3]	103	1.4	197	1.5	133	1.3	70	1.5	158	0.9	137	0.9
Low birthweight[4]	712	9.4	1,136	8.6	778	7.7	392	8.1	1,072	6.2	1,012	6.8
Adequate prenatal care[5]	5,160	73.9	9,698	80.0	7,791	81.4	3,863	85	14,277	87	12,703	88.2
Cesarean section delivery	2,029	26.6	3,994	30.4	3,188	31.5	1,648	34	5,698	33	4,863	32.6
Breastfeeding[6]	5,295	70.4	9,316	72.4	7,799	79.4	3,711	83	15,240	90	13,764	93.6
Multiple births	186	2.4	412	3.2	330	3.3	215	4.6	860	5.1	968	6.6
Smoking during pregnancy	1,102	14.7	1,937	15.0	1,107	11.2	236	5	213	1.3	53	0.4

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.

1. For state total, race and age categories, percentages are based on row totals. For all other categories, percentages are based on state column totals. 2. Includes women born outside of the 50 US States, Washington D.C., and Puerto Rico/US territories (the US Virgin Islands, and Guam). 3. Very low birthweight: less than 1,500 grams or 3.3 pounds. 4. Low birthweight: less than 2,500 grams or 5.5 pounds. 5. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary for definition. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 6. Infant was being breastfed at time of discharge.

Table 43. Inter-pregnancy Interval (IPI) and Birth Outcomes -- Pregnancies to Multiparous Mothers, Massachusetts: 2012

	IPI[1] (months)	Pregnancies to Multiparous[2] Mothers	Birth Weight				Gestational Age			
			Low (<2,500 g)		Very Low (<1,500 g)		Preterm[3] (<37 wk)		Very Early[4] (<28 wk)	
			n	%LBW	n	%VLBW	n	%Preterm	n	%VEGA
	State Total	**35,853**	**2,038**	**5.7%**	**304**	**0.8%**	**2,550**	**7.2%**	**178**	**0.5%**
	<6	1,634	125	7.7%	15	0.9%	151	9.4%	8	0.5%
	6-11	3,585	154	4.3%	24	0.7%	217	6.1%	13	0.4%
	12-17	5,008	229	4.6%	31	0.6%	309	6.3%	22	0.4%
	18-23	4,596	216	4.7%	19	0.4%	309	6.8%	16	0.4%
	24-29	3,825	190	5.0%	35	0.9%	227	6.0%	21	0.6%
	30-35	2,858	138	4.8%	16	0.6%	189	6.7%	12	0.4%
	36-41	2,253	125	5.6%	17	0.8%	151	6.8%	13	0.6%
	42-47	1,886	125	6.6%	17	0.9%	154	8.2%	8	0.4%
	48+	10,208	736	7.2%	130	1.3%	843	8.3%	65	0.6%
Short	**0-11**	5,219	279	5.3%	39	0.7%	368	7.2%	21	0.4%
	12-35	16,287	773	4.7%	101	0.6%	1,034	6.4%	71	0.4%
	36+	14,347	986	6.9%	164	1.1%	1,148	8.1%	86	0.6%

1. Interpregnancy Interval (IPI) is the time in months between the date of last menstrual period of current pregnancy and the date of previous live birth. 2. Multiparous is defined as having given birth two or more times. 3. Also known as premature delivery. 4. Very early gestational age (VEGA) refers to birth before 28 weeks of gestational age and is also known as *extremely preterm* delivery.

Table 44. Resident Teen Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2012

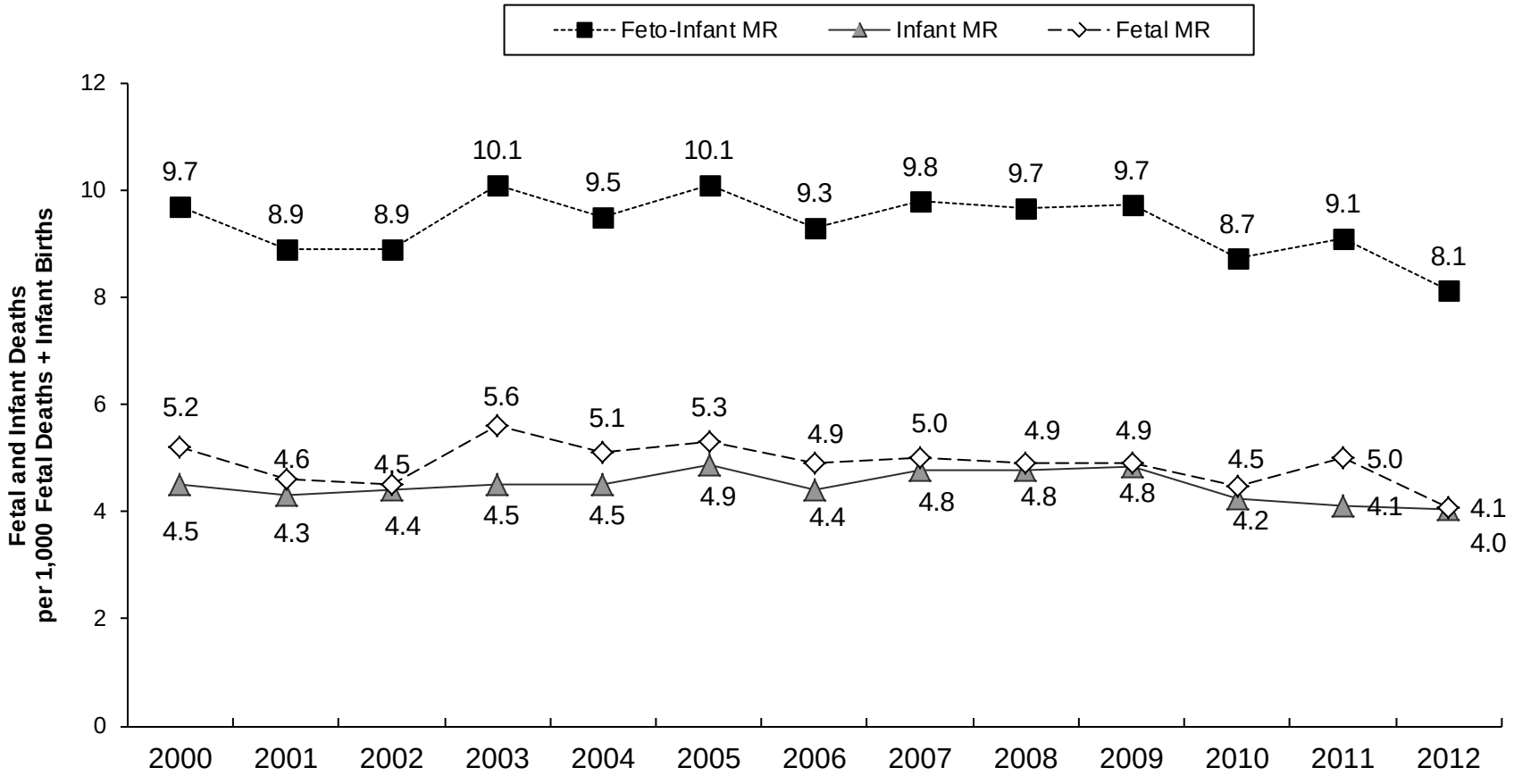
Municipality[1]	Total Population Rank	Female Population, ages 15-19	Number of Teen Births	Teen Birth Rate[2]	Mother's Race and Hispanic Ethnicity (% of teen births)			
					White non-Hispanic	Black non-Hispanic	Hispanic	Asian or other[3]
State Total		**226,538**	**3,219**	**14.2**	**38.2**	**14.0**	**44.3**	**3.4**
Arlington	30	867	--[4]	--[4]	--[4]	--[4]	--[4]	--[4]
Attleboro	29	1,344	24	17.9	62.5	--[4]	--[4]	--[4]
Barnstable	27	1,278	23	18.0	43.5	26.1	21.7	--[4]
Boston	1	25,988	368	14.2	8.4	40.2	48.9	2.4
Brockton	7	3,354	105	31.3	21.0	52.4	25.7	--[4]
Brookline	18	1,469	0	0.0	0.0	0.0	0.0	0.0
Cambridge	5	3,550	14	3.9	0.0	35.7	50.0	--[4]
Chicopee	22	1,881	48	25.5	52.1	4.2	43.8	0.0
Fall River	10	2,781	100	36.0	68.0	--[4]	19.0	--[4]
Framingham	14	2,351	43	18.3	18.6	--[4]	74.4	0.0
Haverhill	15	1,791	41	22.9	43.9	--[4]	51.2	--[4]
Lawrence	12	3,395	174	51.3	8.6	--[4]	--[4]	--[4]
Lowell	4	4,118	130	31.6	28.5	--[4]	42.3	26.9
Lynn	9	3,223	113	35.1	19.5	8.0	65.5	7.1
Malden	17	1,548	15	9.7	40.0	--[4]	33.3	--[4]
Medford	20	1,683	7	4.2	--[4]	--[4]	--[4]	0.0
Methuen	26	1,624	20	12.3	40.0	--[4]	55.0	0.0
New Bedford	6	3,037	128	42.1	34.4	18.0	45.3	--[4]
Newton	11	4,195	--[4]	--[4]	--[4]	--[4]	--[4]	--[4]
Peabody	25	1,405	14	10.0	78.6	--[4]	--[4]	0.0
Pittsfield	28	1,339	34	25.4	61.8	--[4]	23.5	--[4]
Plymouth	19	1,641	24	14.6	62.5	25.0	--[4]	0.0
Quincy	8	1,984	17	8.6	52.9	--[4]	--[4]	--[4]
Revere	24	1,434	27	18.8	18.5	--[4]	70.4	--[4]
Somerville	13	1,711	25	14.6	24.0	0.0	76.0	0.0
Springfield	3	6,836	319	46.7	10.0	15.4	72.1	2.5
Taunton	21	1,744	40	22.9	65.0	--[4]	25.0	--[4]
Waltham	16	2,356	13	5.5	--[4]	--[4]	84.6	0.0
Weymouth	23	1,444	13	9.0	76.9	--[4]	--[4]	0.0
Worcester	2	7,726	186	24.1	35.5	11.3	52.2	1--[4]

Table 44 (cont'd). Resident Teen Birth Characteristics, 30 Largest Municipalities, Massachusetts: 2012

Municipality	Public Payment for Prenatal Care[5] (%)	Unmarried (%)	Low Birthweight[6] (%)	Preterm[7] (%)	Adequacy of Prenatal Care[8]			
					Adequate Intensive	Adequate Basic	Intermediate	Inadequate[9]
State Total	**79.6**	**93.5**	**9.7**	**9.2**	34	39.6	8.6	17.8
Arlington	--[4]	--[4]	0	0	0	50	0	50
Attleboro	57.9	90.0	--[4]	0.0	--[4]	52.4	0	33.3
Barnstable	81	87.5	--[4]	--[4]	--[4]	21.7	39.1	30.4
Boston	84.5	92.9	9.8	9.3	28.5	50.8	5.3	15.4
Brockton	78.1	93.3	11.4	8.6	37.1	35.2	7.6	20
Brookline	0.0	0.0	0.0	0.0	0	0	0	0
Cambridge	78.6	100.0	--[4]	--[4]	57.1	--[4]	--[4]	7.1
Chicopee	77.1	93.8	--[4]	--[4]	27.7	36.2	19.1	17
Fall River	90.6	95.0	10.0	9.1	59.2	21.4	0	19.4
Framingham	73.8	81.4	14.0	--[4]	--[4]	83.3[10]	0	0
Haverhill	75	95.1	--[4]	--[4]	35	45	--[4]	12.5
Lawrence	85.6	96.0	9.8	9.2	17.2	48.5	21.3	13
Lowell	80.6	96.2	10.0	13.1	38	33.3	7	21.7
Lynn	89.4	86.7	5.3	5.3	38.7	34	8.5	18.9
Malden	78.6	78.6	--[4]	--[4]	26.7	40	--[4]	--[4]
Medford	71.4	100.0	--[4]	0.0	--[4]	--[4]	0	--[4]
Methuen	83.3	100.0	--[4]	26.3	--[4]	50	--[4]	--[4]
New Bedford	82.4	96.8	9.3	10.3	28.9	43.8	11.7	15.6
Newton	--[4]	--[4]	0.0	--[4]	--[4]	0	--[4]	0
Peabody	71.4	85.7	--[4]	--[4]	41.7	58.3	0	0
Pittsfield	79.4	100.0	--[4]	--[4]	17.6	50	26.5	--[4]
Plymouth	79.2	95.8	--[4]	--[4]	29.2	29.2	--[4]	33.3
Quincy	76.5	88.2	--[4]	--[4]	56.3	--[4]	--[4]	--[4]
Revere	71.4	82.1	17.9	17.9	44.4	25.9	--[4]	18.5
Somerville	92	76.0	--[4]	--[4]	48	20	--[4]	28
Springfield	88.6	95.0	8.5	8.5	31.1	43	6.5	19.4
Taunton	70	100.0	17.5	15.0	27.5	50	--[4]	15
Waltham	76.9	84.6	--[4]	0.0	--[4]	45.5[10]	0	--[4]
Weymouth	53.8	84.6	--[4]	--[4]	41.7	41.7	0	--[4]
Worcester	85.9	95.2	9.1	8.6	34.4	43.8[10]	--[4]	20.3[10]

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. The 30 largest municipalities are the cities and towns in Massachusetts with the largest populations according to the 2010 Census. 2. Birth rates represent the number of births per 1,000 females ages 15-19. Birth rates for cities and towns were calculated using MDPH population estimates for 2010. 3. Mothers who designated themselves as Asian, American Indian, or Other. 4. Counts and calculations based on values of 1-4 are excluded. 5. See Glossary under "Prenatal Care Payment Source." 6. Less than 2,500 grams or 5.5 pounds. 7. Less than 37 weeks of gestational age. 8. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Please see Glossary and Technical Notes in the Appendix for definitions of index and adequacy categories. State total does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.
9. Inadequate includes those mothers with no prenatal care. 10. Percent should be interpreted with caution, because a large number of births (>10%) occurred at the facilities where reporting problems were noted.

Figure 27. Feto-Infant Mortality Rate, Massachusetts: 2000-2012



NOTES: In this graph, Infant, Fetal, and Feto-Infant Mortality Rates include all deaths (including those with unknown birthweight). The Infant Mortality Rate in this graph includes fetal deaths in the denominator unlike the conventional IMR. The Infant Mortality Rate and Fetal Mortality Rate may not add up to the Feto-Infant Mortality Rate due to rounding.

Source: Starting with *Massachusetts Births 2003*, linked death-cohort files of MA resident infant deaths for the years 2000-2011 have been used for the calculation of infant mortality.

Table 45. Fetal and Infant Deaths by Birthweight and Gestational Age, Massachusetts: 1998-2012

Year	Fetals <24 wks or <500 grams	Fetals ≥ 24 wks and ≥ 500 grams	Infants <24 wks or <500 grams	Infants ≥ 24 wks and ≥ 500 grams	Total
1998	216 (25.5%)	219 (25.8%)	183 (21.6%)	230 (27.1%)	848 (100.0%)
1999	214 (25.4%)	215 (25.6%)	196 (23.3%)	216 (25.7%)	841 (100.0%)
2000	203 (25.1%)	234 (28.9%)	168 (20.7%)	205 (25.3%)	810 (100.0%)
2001	174 (22.0%)	214 (27.1%)	197 (24.9%)	206 (26.0%)	791 (100.0%)
2002	165 (22.3%)	210 (28.3%)	185 (25.0%)	181 (24.4%)	741 (100.0%)
2003	218 (26.3%)	246 (29.6%)	189 (22.8%)	177 (21.3%)	830 (100.0%)
2004	177 (22.7%)	240 (30.8%)	182 (23.3%)	181 (23.2%)	780 (100.0%)
2005	210 (26.3%)	213 (26.7%)	174 (21.8%)	201 (25.2%)	798 (100.0%)
2006	178 (24.1%)	210 (28.5%)	173 (23.4%)	177 (24.0%)	738 (100.0%)
2007	184 (23.7%)	215 (27.7%)	149 (19.2%)	227 (29.3%)	775 (100.0%)
2008	178 (23.5%)	209 (27.5%)	194 (25.6%)	178 (23.5%)	759 (100.0%)
2009	158 (21.3%)	221 (29.8%)	162 (21.8%)	201 (27.1%)	742 (100.0%)
2010	150 (23.1%)	180 (27.7%)	153 (23.6%)	166 (25.6%)	649 (100.0%)
2011	147 (21.7%)	223 (32.9%)	133 (19.6%)	174 (25.7%)	677 (100.0%)
2012	143 (23.2%)	165 (26.8%)	131 (21.3%)	177 (28.7%)	616 (100.0%)

Source: Starting with *Massachusetts Births 2003*, linked death-cohort files of MA resident infant deaths for the years 1998-2012 have been used for the calculation of infant mortality.

Table 46. Adequacy of Prenatal Care Utilization: Summary and Component Indices, Massachusetts: 2012

	Adequate Total[1]		Adequate Intensive[2]		Adequate Basic[2]		Intermediate[2]		Inadequate[2]		Unknown[2]
	n	%	n	%	n	%	n	%	n	%	n
Summary Index[3]											
Adequacy of Prenatal Care Utilization	50,943	85.4	25,687	43.1	25,256	42.3	3,156	5.3	5,559	9.3	4,153
Component Indices[3]											
Adequacy of Initiation	54,429	91.2	20,946	35.1	33,483	56.1	3,105	5.2	2,124	3.6	4,153
Adequacy of Received Services (Visits)	55,517	93.1	29,328	49.2	26,189	43.9	3,512	5.9	629	1.1	4,153

NOTE: All percentages are calculated based on the Adequacy of Prenatal Care Utilization (APNCU) Index**. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems.**

1. Adequate Total is the sum of Adequate Intensive and Adequate Basic categories. 2. For definitions of these categories, please see the Technical Notes in the Appendix. 3. For an explanation of the APNCU Index (summary index) and its component indices, please see Technical Notes in the Appendix.

Table 47. Birth Characteristics by Race/Hispanic Ethnicity and Source of Prenatal Care Payment, Massachusetts: 2012

Race/Ethnicity and Payment Source	Births[1]		Teen Births				Birthweight			
			<18 Years		<20 Years		Very Low[2]		Low[3]	
	n	%	n	%	n	%	n	%	n	%
STATE TOTAL[4]	**72,457**	**100.0**	**872**	**1.2**	**3,254**	**4.5**	**878**	**1.2**	**5,491**	**7.6**
Public	28,186	39.6	702	2.5	2,552	9.1	349	1.2	2,333	8.3
Medicaid[5]	23,878	33.6	637	2.7	2,290	9.6	305	1.3	2,024	8.5
Other Public[6]	4,308	6.1	65	1.5	262	6.1	44	1.0	309	7.2
Private[7]	42,301	59.5	146	0.3	625	1.5	440	1.0	2,863	6.8
White non-Hispanic	**45,032**	**100.0**	**285**	**0.6**	**1,234**	**2.7**	**474**	**1.1**	**3,076**	**6.8**
Public	11,740	26.6	202	1.7	833	7.1	134	1.1	911	7.8
Medicaid[5]	9,796	22.2	180	1.8	754	7.7	121	1.2	774	7.9
Other Public[6]	1,944	4.4	22	1.1	79	4.1	13	0.7	137	7.0
Private[7]	31,963	72.5	79	0.2	374	1.2	289	0.9	1,994	6.2
Black non-Hispanic	**6,892**	**100.0**	**103**	**1.5**	**454**	**6.6**	**137**	**2.0**	**705**	**10.2**
Public	4,539	66.3	86	1.9	360	7.9	72	1.6	431	9.5
Medicaid[5]	3,881	56.7	79	2.0	334	8.6	62	1.6	368	9.5
Other Public[6]	658	9.6	7	1.1	26	4.0	10	1.5	63	9.6
Private[7]	2,203	32.2	14	0.6	82	3.7	51	2.3	228	10.3
Hispanic	**13,088**	**100.0**	**455**	**3.5**	**1,447**	**11.1**	**196**	**1.5**	**1,109**	**8.5**
Public	9,654	74.3	394	4.1	1,281	13.3	122	1.3	794	8.2
Medicaid[5]	8,229	63.3	359	4.4	1,136	13.8	104	1.3	703	8.5
Other Public[6]	1,425	11.0	35	2.5	145	10.2	18	1.3	91	6.4
Private[7]	3,210	24.7	45	1.4	136	4.2	53	1.7	262	8.2
Asian	**6,530**	**100.0**	**18**	**0.3**	**78**	**1.2**	**59**	**0.9**	**506**	**7.7**
Public	1,859	28.7	11	0.6	54	2.9	15	0.8	147	7.9
Medicaid[5]	1,643	25.4	11	0.7	47	2.9	13	0.8	133	8.1
Other Public[6]	216	3.3	0	0.0	7	3.2	2	--[8]	14	6.5
Private[7]	4,567	70.5	6	0.1	22	0.5	43	0.9	345	7.6
Other[9]	**648**	**100.0**	**10**	**1.5**	**33**	**5.1**	**10**	**1.5**	**72**	**11.1**
Public	331	53.4	8	2.4	23	6.9	5	1.5	40	12.1
Medicaid[5]	279	45.0	7	2.5	18	6.5	4	--[8]	37	13.3
Other Public[6]	52	8.4	1	--[8]	5	9.6	1	--[8]	3	--[8]
Private[7]	275	44.4	2	--[8]	9	3.3	4	--[8]	24	8.7

Table 47 (cont'd). Birth Characteristics by Race/Hispanic Ethnicity and Source of Prenatal Care Payment, Massachusetts: 2012

Race/Ethnicity and Payment Source	Prenatal Care: Adequate[10] n	Adequate[10] %	Began 1st Trimester n	Began 1st Trimester %	Cesarean Delivery n	Cesarean Delivery %	Breastfeeding[11] n	Breastfeeding[11] %	Smoking[12] n	Smoking[12] %
STATE TOTAL[4]	**50,943**	**85.4**	**57,765**	**82.1**	**22,900**	**31.7**	**58,329**	**82.7**	**5,177**	**7.3**
Public	19,160	78.3	20,051	73.6	8,251	29.3	21,033	75.2	3,799	13.9
Medicaid[5]	16,384	78.6	17,115	73.8	7,008	29.4	17,538	74.0	3,333	14.3
Other Public[6]	2,776	76.8	2,936	72.5	1,243	28.9	3,495	81.9	466	11.2
Private[7]	30,909	91.3	36,861	88.5	14,114	33.4	36,863	88.0	1,209	2.9
White non-Hispanic	**31,980**	**87.7**	**37,342**	**84.8**	**14,573**	**32.4**	**35,581**	**81.6**	**4,069**	**9.2**
Public	7,992	79.0	8,537	74.2	3,554	30.3	7,834	67.2	2,871	25.1
Medicaid[5]	6,712	79.2	7,158	74.5	2,989	30.5	6,368	65.5	2,518	26.3
Other Public[6]	1,280	78.2	1,379	73.0	565	29.1	1,466	76.2	353	18.6
Private[7]	23,285	91.7	28,130	89.2	10,646	33.3	27,553	87.1	1,067	3.4
Black non-Hispanic	**4,638**	**77.7**	**4,796**	**73.4**	**2,343**	**34.1**	**5,792**	**85.2**	**350**	**5.2**
Public	2,871	72.9	2,950	69.0	1,449	32.0	3,729	82.8	287	6.5
Medicaid[5]	2,521	74.4	2,561	69.6	1,229	31.7	3,157	82.0	251	6.6
Other Public[6]	350	63.9	389	65.1	220	33.4	572	87.5	36	5.6
Private[7]	1,732	89.7	1,810	84.5	844	38.4	1,984	91.0	48	2.2
Hispanic	**9,159**	**81.6**	**9,739**	**77.4**	**3,811**	**29.1**	**10,662**	**82.6**	**608**	**4.9**
Public	6,664	79.4	6,960	75.0	2,681	27.8	7,739	80.7	529	5.7
Medicaid[5]	5,692	79.0	5,976	74.9	2,290	27.8	6,530	79.9	457	5.7
Other Public[6]	972	81.6	984	75.8	391	27.4	1,209	85.7	72	5.4
Private[7]	2,424	90.7	2,701	86.3	1,070	33.4	2,826	89.0	63	2.1
Asian	**4,611**	**86.8**	**5,289**	**82.7**	**1,913**	**29.3**	**5,682**	**87.9**	**74**	**1.2**
Public	1,365	81.7	1,339	73.7	447	24.1	1,430	77.0	55	3.0
Medicaid[5]	1,228	82.5	1,196	74.3	398	24.2	1,235	75.3	53	3.3
Other Public[6]	137	75.7	143	69.1	49	22.7	195	90.3	2	--[8]
Private[7]	3,206	89.7	3,912	86.9	1,433	31.4	4,204	92.4	17	0.4
Other[9]	**433**	**78.4**	**480**	**77.4**	**220**	**34.0**	**502**	**82.8**	**72**	**11.6**
Public	217	73.8	224	70.9	106	32.0	261	80.1	53	16.6
Medicaid[5]	188	76.1	189	70.8	90	32.3	214	77.8	50	18.7
Other Public[6]	29	61.7	35	71.4	16	30.8	47	92.2	3	--[8]
Private[7]	197	87.2	238	87.8	100	36.4	230	85.8	14	5.3

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest, unless otherwise stated.
1. In the "Births" column, percentages are based on race/ethnicity category totals (in column). For all other characteristics, percentages are based on the total number of births for the race/ethnicity by payment source for the row. 2. Very low birthweight: less than 1,500 grams or 3.3 pounds. 3. Low Birthweight: less than 2,500 grams or 5.5 pounds. 4. Total births do not equal Public + Private because Workers' Compensation, self-paid, and other are in the state total but not shown in the table. 5. Medicaid/MassHealth. 6. Other Public: CommonHealth, Healthy Start, Medicare, other government programs, and free care. 7. Private: commercial indemnity plans or commercial managed care organizations (HMO, PPO, IPP, or IPA). It does not include Self-Paid/Other. 8. Calculations based on values of 1-4 are excluded. 9. Other: Mothers who designated their race as American Indian or "Other." 10. Based on the Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester **hospitals because of reporting problems.** 11. Infant was being breastfed at time of discharge. 12. Mother reported smoking during pregnancy.

Table 48. Cesarean Deliveries and Vaginal Births after Cesarean (VBACs) by Licensed Maternity Facility, All Births, Massachusetts: 2012

Facility[1]	Occurrence Births[2]	Total Cesareans		Primary Cesareans[2]		Repeat Cesareans[2]		VBACs[2]	
		N	%[3,4]	N	%[3,5]	N	%[3,6]	N	%[7]
State Total	**72,828**	**23,123**	**31.8**	**13,345**	**21.6**	**9,778**	**88.8**	**1,229**	**11.2**
Anna Jaques Hospital	625	205	32.8	124	23.2	81	90.0	9	10.0
Baystate Franklin Medical Center	465	103	22.2	59	14.6	44	73.3	16	26.7
Baystate Medical Center	4,245	1,346	31.7	782	21.9	564	83.4	112	16.6
Berkshire Medical Center	704	177	25.1	85	14.5	92	79.3	24	20.7
Beth Israel Deaconess Medical Center	4,794	1,659	34.6	1,017	25.1	642	85.9	105	14.1
Beverly Hospital	2,199	671	30.5	383	20.2	288	95.0	15	5.0
Boston Medical Center	2,498	697	27.9	461	21.6	236	64.1	132	35.9
Brigham And Women's Hospital	7,784	2,603	33.6	1,649	24.4	954	96.6	34	3.4
Brockton Hospital	996	374	37.6	194	24.6	180	87.0	27	13.0
Cambridge Hospital	1,172	259	22.1	142	13.8	117	80.1	29	19.9
Cape Cod Hospital	833	264	31.7	147	20.7	117	94.4	7	5.6
Charlton Memorial Hospital	1,522	511	33.6	284	22.0	227	99.6	1	--[8]
Cooley Dickinson Hospital	853	240	28.1	145	19.4	95	88.8	12	11.2
Emerson Hospital	1,122	364	32.5	225	23.6	139	83.2	28	16.8
Fairview Hospital	153	42	27.5	19	14.6	23	100.0	0	0.0
Falmouth Hospital	468	157	33.5	84	21.3	73	100.0	0	0.0
Good Samaritan Medical Center	883	421	47.7	258	36.1	163	96.4	6	3.6
Harrington Memorial Hospital	298	104	34.9	57	22.7	47	100.0	0	0.0
Healthalliance Hospital	1,003	245	24.4	141	15.7	104	97.2	3	2.8
Heywood Hospital	522	89	17.0	49	10.4	40	78.4	11	21.6
Holy Family Hospital and Medical Center	1,029	416	40.4	238	28.1	178	97.8	4	--[8]
Holyoke Medical Center	432	111	25.7	71	18.5	40	81.6	9	18.4
Jordan Hospital	674	226	33.5	131	22.9	95	92.2	8	7.8
Lawrence General Hospital	1,468	440	30.0	176	14.8	264	95.3	13	4.7
Lowell General Hospital	2,310	731	31.7	373	19.5	358	90.9	36	9.1
Martha's Vineyard Hospital	120	37	30.8	21	20.2	16	100.0	0	0.0
Massachusetts General Hospital	3,720	1,160	31.2	735	23.0	425	80.3	104	19.7
Melrose-Wakefield Hospital	1,031	382	37.1	194	23.0	188	100.0	0	0.0
Mercy Medical Center	1,224	289	23.6	160	14.7	129	95.6	6	4.4
Metro West Medical Center	909	342	37.6	163	22.6	179	94.7	10	5.3
Milford Regional Medical Center	892	301	33.7	162	21.9	139	91.4	13	8.6
Morton Hospital	467	159	34.0	90	22.6	69	100.0	0	0.0
Mt. Auburn Hospital	2,395	530	22.1	326	15.4	204	75.0	68	25.0

Table 48. Cesarean Deliveries and Vaginal Births after Cesarean (VBACs) by Licensed Maternity Facility, All Births, Massachusetts: 2012

Facility[1]	Occurrence Births[2]	Total Cesareans		Primary Cesareans[2]		Repeat Cesareans[2]		VBACs[2]	
		N	%[3,4]	N	%[3,5]	N	%[3,6]	N	%[7]
Nantucket Cottage Hospital	136	46	33.8	25	21.7	21	100.0	0	0.0
Newton-Wellesley Hospital	4,057	1,287	31.7	754	21.7	533	92.7	42	7.3
North Adams Regional Hospital	235	66	28.1	37	18.1	29	93.5	2	--[8]
North Shore Medical Center - Salem Hospital	1,373	433	31.5	225	19.6	208	92.4	17	7.6
Norwood Hospital	481	149	31.0	71	17.8	78	94.0	5	6.0
Saint Vincent Hospital	1,900	617	32.5	395	24.2	222	83.5	44	16.5
South Shore Hospital	3,389	1,342	39.6	675	25.3	667	92.1	57	7.9
St. Elizabeth's Medical Center	933	342	36.7	180	23.9	162	90.5	17	9.5
St. Luke's Hospital	1,493	555	37.2	307	24.7	248	100.0	0	0.0
Sturdy Memorial Hospital	791	254	32.1	147	21.8	107	90.7	11	9.3
Tobey Hospital	444	84	18.9	41	10.3	43	95.6	2	--[8]
Tufts Medical Center	1,215	484	39.8	313	30.7	171	88.1	23	11.9
Umass Memorial Medical Center	4,005	1,116	27.9	637	18.7	479	79.8	121	20.2
Winchester Hospital	1,891	693	36.6	393	25.2	300	91.2	29	8.8

NOTE: All percentages are calculated based on only those births with known values for the characteristic(s) of interest

1. A licensed maternity facility is a medical unit licensed by the Commonwealth for the care of women during pregnancy and childbirth.
2. See Glossary for definitions of occurrence births, primary and repeat Cesarean sections, and VBACs. The percentages provided in this table are based on occurrence births, and may differ from data that are based on resident births presented elsewhere in this book. 3. The percentage of Cesarean births reported is not adjusted for risk factors such as mother's age, birthweight, or complications of labor and delivery, which would influence the number of procedures in a particular facility. Caution should be used when comparing unadjusted percentages. 4. Percentage of total Cesarean = (total Cesarean births/all births) x 100. 5. Percentage primary Cesarean = (primary Cesarean /(all births-repeat Cesarean - VBACs-unknown method of delivery)) x 100. 6. Percentage repeat Cesarean = (repeat Cesarean / (repeat Cesarean + VBACs)) x100. 7. Percentage VBACs= (VBAC deliveries/ (repeat Cesarean + VBAC)) x 100. 8. Calculations based on values of 1-4 are excluded.

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
STATE TOTAL	**72,828**	**72,457**	**5,491**	**3,219**	**309**	**216**	**308**
Abington	0	173	24	--	2	2	0
Acton	1	162	12	0	0	0	--
Acushnet	1	92	9	--	0	0	0
Adams	0	76	9	--	1	1	--
Agawam	2	249	9	5	1	0	0
Alford	0	6	0	0	0	0	0
Amesbury	1	156	17	6	0	0	0
Amherst	4	159	--	--	2	1	--
Andover	2	228	11	0	0	0	--
Arlington	2	598	54	--	1	1	--
Ashburnham	1	44	--	--	0	0	0
Ashby	0	23	--	--	0	0	0
Ashfield	1	19	--	0	0	0	0
Ashland	1	214	28	--	0	0	--
Athol	2	125	13	8	0	0	--
Attleboro	795	549	46	24	2	1	--
Auburn	1	158	9	6	2	2	--
Avon	0	42	--	0	0	0	0
Ayer	0	97	7	8	0	0	0
Barnstable	836	427	30	24	1	1	5
Barre	1	44	--	--	0	0	0
Becket	0	16	--	--	0	0	0
Bedford	0	135	10	--	0	0	0
Belchertown	3	136	6	--	1	1	--
Bellingham	1	175	20	5	1	1	--
Belmont	1	281	12	--	0	0	--
Berkley	0	58	--	5	0	0	0
Berlin	0	24	0	0	0	0	0
Bernardston	0	16	0	--	0	0	0
Beverly	2,308	412	24	5	2	1	0
Billerica	3	414	29	11	2	1	0
Blackstone	1	84	6	--	0	0	0
Blandford	0	7	--	0	0	0	0
Bolton	1	37	--	0	0	0	0
Boston	20,990	8,032	677	368	38	23	34
Bourne	2	141	12	6	0	0	0
Boxborough	0	33	0	0	0	0	0
Boxford	0	29	--	0	0	0	0
Boylston	0	31	--	0	0	0	0
Braintree	0	401	38	--	4	3	--
Brewster	1	55	6	--	0	0	0
Bridgewater	0	219	15	5	0	0	--
Brimfield	0	23	--	0	0	0	0
Brockton	1,884	1,354	138	105	7	5	12

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Brookfield	0	32	--	--	0	0	0
Brookline	3	686	60	0	0	0	--
Buckland	1	19	--	0	0	0	0
Burlington	0	283	20	5	1	0	0
Cambridge	3,724	1,269	104	14	3	2	--
Canton	0	221	24	--	1	0	0
Carlisle	1	26	--	0	0	0	0
Carver	1	109	6	--	0	0	--
Charlemont	0	6	0	--	0	0	0
Charlton	0	102	12	6	1	0	--
Chatham	0	20	--	--	0	0	0
Chelmsford	2	370	29	--	1	1	--
Chelsea	4	649	39	60	1	1	--
Cheshire	1	30	--	--	0	0	0
Chester	0	8	0	--	0	0	0
Chesterfield	0	16	--	0	0	0	0
Chicopee	3	628	43	48	2	1	--
Chilmark	2	9	--	0	0	0	0
Clarksburg	0	4	0	0	0	0	0
Clinton	3	180	13	--	2	2	--
Cohasset	0	50	0	0	0	0	0
Colrain	0	12	0	0	0	0	0
Concord	1,128	106	--	--	0	0	0
Conway	0	11	--	--	0	0	0
Cummington	0	7	0	0	0	0	0
Dalton	1	53	--	--	0	0	--
Danvers	0	292	26	--	0	0	0
Dartmouth	1	191	9	9	2	2	0
Dedham	1	256	10	--	1	0	--
Deerfield	2	42	--	--	0	0	0
Dennis	1	76	--	6	0	0	0
Dighton	0	51	--	--	0	0	--
Douglas	1	85	--	--	0	0	0
Dover	0	34	--	0	1	1	0
Dracut	2	342	20	9	2	1	--
Dudley	1	74	--	--	1	1	0
Dunstable	0	11	--	--	0	0	0
Duxbury	0	89	6	--	1	0	0
East Bridgewater	1	148	12	--	1	1	0
East Brookfield	0	35	--	--	1	1	--
East Longmeadow	0	122	--	--	0	0	0
Eastham	1	32	0	--	0	0	0
Easthampton	2	129	10	--	0	0	0
Easton	0	178	15	0	0	0	0
Edgartown	1	44	--	--	1	0	--

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Egremont	0	1	0	0	0	0	0
Erving	1	13	--	--	0	0	0
Essex	0	31	--	0	1	1	0
Everett	1	620	42	30	4	2	--
Fairhaven	0	132	5	8	0	0	0
Fall River	1,524	1,093	91	101	6	6	7
Falmouth	469	232	9	15	1	0	--
Fitchburg	2	549	48	53	5	4	--
Florida	0	0	0	0	0	0	0
Foxborough	0	165	13	--	0	0	--
Framingham	917	907	72	43	4	3	--
Franklin	1	296	24	--	0	0	0
Freetown	0	62	--	--	1	1	0
Gardner	524	250	24	17	1	0	--
Gay Head	0	6	0	0	0	0	0
Georgetown	0	68	--	0	0	0	0
Gill	0	12	--	--	0	0	0
Gloucester	1	246	21	9	2	1	0
Goshen	0	10	--	0	0	0	0
Gosnold	0	0	0	0	0	0	0
Grafton	2	212	8	7	0	0	0
Granby	0	40	--	0	0	0	0
Granville	1	12	0	0	0	0	0
Great Barrington	155	53	5	--	1	1	0
Greenfield	468	189	10	16	2	2	--
Groton	2	94	13	0	0	0	0
Groveland	0	47	5	--	0	0	0
Hadley	2	38	--	--	0	0	--
Halifax	0	64	--	--	0	0	0
Hamilton	0	96	10	0	0	0	--
Hampden	0	25	--	0	0	0	0
Hancock	0	2	0	0	0	0	0
Hanover	0	94	--	--	0	0	0
Hanson	0	85	10	--	0	0	--
Hardwick	1	25	0	0	0	0	0
Harvard	0	23	0	0	0	0	0
Harwich	1	79	9	0	0	0	--
Hatfield	0	11	0	0	0	0	0
Haverhill	4	813	48	41	2	2	5
Hawley	0	3	0	0	0	0	0
Heath	0	5	0	0	0	0	0
Hingham	1	204	--	--	0	0	0
Hinsdale	0	15	0	--	0	0	0
Holbrook	0	140	5	9	0	0	--
Holden	3	153	--	--	0	0	0

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Holland	0	25	--	--	0	0	0
Holliston	0	112	9	0	0	0	0
Holyoke	434	588	57	86	10	3	--
Hopedale	0	50	--	--	0	0	--
Hopkinton	1	127	5	0	0	0	0
Hubbardston	0	30	5	--	0	0	0
Hudson	0	212	7	12	1	1	0
Hull	0	80	--	--	0	0	0
Huntington	0	30	--	--	0	0	0
Ipswich	0	96	--	--	0	0	0
Kingston	0	101	--	--	1	0	0
Lakeville	0	93	--	5	1	1	--
Lancaster	1	61	0	0	0	0	0
Lanesborough	0	23	--	--	0	0	0
Lawrence	1,473	1,327	112	174	8	6	9
Lee	0	62	7	--	1	0	0
Leicester	0	103	8	6	4	1	0
Lenox	0	23	--	--	0	0	0
Leominster	1,005	465	34	27	1	1	--
Leverett	1	14	0	0	0	0	0
Lexington	2	203	17	0	0	0	0
Leyden	0	7	--	--	0	0	0
Lincoln	2	70	--	0	0	0	--
Littleton	2	83	12	--	1	0	--
Longmeadow	1	106	--	--	0	0	0
Lowell	2,318	1,666	141	130	6	5	8
Ludlow	0	135	8	8	0	0	0
Lunenburg	2	90	--	--	0	0	0
Lynn	2	1,502	135	113	11	9	--
Lynnfield	1	91	7	0	0	0	0
Malden	1	886	72	15	0	0	--
Manchester	0	28	--	0	0	0	--
Mansfield	0	212	6	--	0	0	--
Marblehead	1	137	6	--	0	0	0
Marion	0	37	--	--	0	0	0
Marlborough	3	505	62	26	3	3	--
Marshfield	0	210	15	5	1	1	--
Mashpee	0	114	12	--	2	2	0
Mattapoisett	1	43	5	--	1	1	0
Maynard	2	130	5	--	1	1	0
Medfield	0	88	--	0	0	0	0
Medford	3	686	48	7	1	0	--
Medway	1	118	11	--	0	0	0
Melrose	1,032	359	14	--	1	1	--
Mendon	0	44	--	0	0	0	0

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Merrimac	0	35	--	--	0	0	0
Methuen	1,030	569	49	20	4	1	--
Middleborough	1	240	13	11	0	0	0
Middlefield	0	3	0	0	0	0	0
Middleton	0	71	8	0	1	1	0
Milford	895	365	37	17	1	1	--
Millbury	0	125	9	--	2	1	0
Millis	0	64	--	0	0	0	0
Millville	0	42	--	--	0	0	0
Milton	2	293	20	--	0	0	--
Monroe	0	1	0	0	0	0	0
Monson	0	47	6	--	1	1	--
Montague	2	95	5	9	2	1	--
Monterey	0	5	0	0	0	0	0
Montgomery	0	5	0	0	0	0	0
Mount Washington	0	2	0	0	0	0	0
Nahant	0	18	0	0	0	0	0
Nantucket	139	157	8	--	0	0	0
Natick	3	421	36	0	1	1	--
Needham	3	277	23	--	1	1	0
New Ashford	0	2	0	0	0	0	0
New Bedford	1,496	1,318	131	129	5	5	13
New Braintree	0	12	--	--	0	0	0
New Marlborough	0	7	--	0	0	0	0
New Salem	0	8	0	0	0	0	0
Newbury	1	34	--	0	0	0	0
Newburyport	625	158	10	5	1	1	--
Newton	4,066	812	60	--	4	3	--
Norfolk	0	88	--	0	1	0	0
North Adams	236	135	11	10	0	0	0
North Andover	1	267	16	--	1	1	--
North Attleboro	3	296	20	--	1	1	0
North Brookfield	1	35	--	--	0	0	0
North Reading	0	119	7	--	1	1	0
Northampton	866	205	12	6	0	0	0
Northborough	1	117	6	--	1	1	--
Northbridge	2	167	20	7	0	0	0
Northfield	1	22	0	0	0	0	0
Norton	0	172	10	5	0	0	--
Norwell	1	86	--	--	0	0	0
Norwood	481	375	36	8	1	0	--
Oak Bluffs	121	40	--	--	0	0	--
Oakham	0	22	0	--	0	0	0
Orange	0	79	9	12	1	1	0
Orleans	0	31	0	--	0	0	0

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Otis	0	10	--	0	0	0	0
Oxford	0	125	8	--	2	2	--
Palmer	0	134	12	8	0	0	--
Paxton	0	29	--	0	0	0	0
Peabody	2	513	37	14	2	2	--
Pelham	0	3	0	0	0	0	0
Pembroke	0	190	12	--	0	0	0
Pepperell	1	90	--	--	0	0	0
Peru	0	4	--	--	0	0	0
Petersham	1	15	--	0	0	0	0
Phillipston	1	13	--	0	1	1	0
Pittsfield	704	530	40	34	3	2	--
Plainfield	0	9	--	--	1	0	0
Plainville	0	83	5	--	0	0	--
Plymouth	677	571	42	24	1	1	--
Plympton	0	21	--	--	0	0	0
Princeton	0	18	--	0	0	0	0
Provincetown	0	6	--	--	0	0	0
Quincy	5	1,253	87	17	4	2	--
Randolph	0	364	29	11	2	2	--
Raynham	0	128	8	--	0	0	0
Reading	1	272	17	--	1	1	0
Rehoboth	0	74	--	--	0	0	0
Revere	1	733	53	28	11	9	--
Richmond	0	6	--	0	0	0	0
Rochester	0	47	0	--	0	0	0
Rockland	0	196	15	8	0	0	--
Rockport	0	39	--	--	0	0	0
Rowe	0	2	0	0	0	0	0
Rowley	1	60	--	--	0	0	0
Royalston	0	7	0	0	0	0	0
Russell	0	16	0	--	0	0	0
Rutland	1	71	6	--	0	0	0
Salem	1,375	480	39	25	1	0	--
Salisbury	0	65	10	--	0	0	--
Sandisfield	0	2	0	0	0	0	0
Sandwich	0	136	7	5	0	0	0
Saugus	0	233	15	6	1	1	--
Savoy	0	3	0	0	0	0	0
Scituate	1	170	5	--	0	0	0
Seekonk	0	93	6	--	0	0	0
Sharon	1	148	10	0	0	0	0
Sheffield	1	25	--	0	0	0	0
Shelburne	0	18	--	--	0	0	0
Sherborn	1	26	0	0	0	0	0

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Shirley	0	60	5	5	0	0	0
Shrewsbury	1	366	24	6	1	1	--
Shutesbury	3	14	0	--	0	0	0
Somerset	1	144	9	5	1	1	--
Somerville	4	974	76	25	2	2	0
South Hadley	3	164	13	--	2	2	--
Southampton	0	38	--	--	0	0	0
Southborough	1	68	11	0	0	0	0
Southbridge	300	229	23	31	4	4	0
Southwick	1	60	--	5	0	0	0
Spencer	2	114	8	5	1	1	0
Springfield	5,484	2,384	209	319	9	5	25
Sterling	0	38	--	--	0	0	0
Stockbridge	0	8	--	0	0	0	0
Stoneham	1	230	12	--	0	0	--
Stoughton	2	300	27	9	1	1	--
Stow	0	52	--	0	0	0	0
Sturbridge	1	88	--	--	0	0	0
Sudbury	0	127	6	--	0	0	--
Sunderland	0	25	0	--	0	0	--
Sutton	0	70	--	--	0	0	--
Swampscott	0	130	12	--	0	0	0
Swansea	1	113	6	6	0	0	0
Taunton	469	692	54	41	4	4	--
Templeton	3	65	5	--	0	0	0
Tewksbury	0	318	29	7	1	1	0
Tisbury	0	25	--	0	0	0	0
Tolland	0	5	--	0	1	1	0
Topsfield	0	43	6	0	0	0	0
Townsend	0	74	--	5	0	0	0
Truro	0	7	--	--	0	0	0
Tyngsborough	0	99	--	--	0	0	0
Tyringham	0	0	0	0	0	0	0
Upton	0	66	--	--	0	0	--
Uxbridge	1	110	9	--	1	1	0
Wakefield	1	284	16	--	0	0	0
Wales	1	15	--	0	0	0	0
Walpole	1	221	22	--	1	0	--
Waltham	8	884	72	13	4	3	--
Ware	0	87	5	--	0	0	--
Wareham	445	227	14	14	1	0	--
Warren	1	45	8	--	1	1	0
Warwick	0	7	0	0	0	0	0
Washington	0	0	0	0	0	0	0
Watertown	2	465	22	--	1	0	--

Table 49. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Municipalities: 2012

Community	Occurrence Births[1]	Resident Births[2]	Low Birthweight[3]	Teen Births 15-19 yr	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
Wayland	0	124	7	0	0	0	0
Webster	0	177	14	17	2	1	0
Wellesley	0	220	18	0	2	1	--
Wellfleet	0	26	--	0	0	0	0
Wendell	1	7	0	0	0	0	0
Wenham	0	27	5	0	1	1	0
West Boylston	1	55	0	0	0	0	0
West Bridgewater	0	46	--	0	0	0	0
West Brookfield	1	34	--	--	1	1	0
West Newbury	1	18	0	0	0	0	0
West Springfield	0	354	27	24	1	1	0
West Stockbridge	1	5	0	0	0	0	0
West Tisbury	1	22	0	0	0	0	0
Westborough	1	211	9	--	0	0	0
Westfield	1	347	28	23	2	2	--
Westford	0	157	8	--	1	1	0
Westhampton	0	10	--	0	0	0	0
Westminster	0	52	0	--	0	0	0
Weston	1	60	7	0	0	0	0
Westport	0	103	10	--	0	0	--
Westwood	0	105	8	0	0	0	--
Weymouth	3,395	616	38	13	3	2	--
Whately	1	10	0	--	0	0	0
Whitman	0	187	11	9	0	0	0
Wilbraham	0	80	8	--	0	0	0
Williamsburg	1	17	--	0	0	0	0
Williamstown	0	39	--	0	0	0	0
Wilmington	0	212	19	5	2	2	0
Winchendon	2	118	8	--	0	0	0
Winchester	1,894	184	17	--	0	0	0
Windsor	0	4	0	--	0	0	0
Winthrop	0	147	10	--	0	0	--
Woburn	3	545	39	14	2	2	--
Worcester	5,927	2,542	192	186	19	12	13
Worthington	0	6	0	0	0	0	--
Wrentham	2	98	9	--	1	0	0
Yarmouth	2	206	16	8	1	0	0

Note that infant deaths are based on a preliminary death file as of December 20, 2013.
1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details.
2. Births to mothers who report their usual place of residence as a particular geographical place (state, or city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more.
-- Due to small numbers (n=1-4), exact count not provided.

Table 50. Birth Characteristics: Occurrence and Resident Births and Infant Deaths by County, Massachusetts: 2012

County	Occurrence Births[1]	Resident Births[2]			Deaths		
		Number	Low Birthweight[3]	Teen Births (15-19 years)	Infant Deaths[4]	Neonatal Deaths[5]	Fetal Deaths[6]
STATE TOTAL	**72,828**	**72,457**	**5,491**	**3,219**	**309**	**216**	**308**
BARNSTABLE	1,313	1,588	110	79	5	3	8
BERKSHIRE	1,099	1,151	93	63	6	4	--[7]
BRISTOL	4,291	5,751	449	354	22	21	29
DUKES	125	146	10	--[7]	1	0	--[7]
ESSEX	6,829	8,359	645	436	38	28	38
FRANKLIN	482	656	36	49	5	4	--[7]
HAMPDEN	5,928	5,375	429	538	27	14	37
HAMPSHIRE	881	1,118	63	29	6	4	6
MIDDLESEX	15,137	17,613	1317	429	52	39	51
NANTUCKET	139	157	8	--[7]	0	0	0
NORFOLK	3,899	7,177	550	92	25	14	28
PLYMOUTH	3,013	5,084	375	220	17	12	24
SUFFOLK	20,995	9,561	779	459	50	33	42
WORCESTER	8,696	8,721	627	463	55	40	36

Note that infant deaths are based on a preliminary death file as of December 20, 2013.
1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 2. Births to mothers who report their usual place of residence as a particular geographical place (state, or city/town). See Glossary for more details.
3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days.
6. A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more. 7. Due to small numbers (n=1-4), exact count not provided.

Table 51. Birth Characteristics: Occurrence and Resident Births and Infant Deaths, Massachusetts Community Health Network Areas (CHNAs), Massachusetts: 2012

Community Health Network Area	Occurrence Births[1]	Resident Births[2]			Deaths		
		Number	LBW[3]	Teen Births (15-19 years)	Infant[4]	Neonatal[5]	Fetal[6]
STATE TOTAL	**72,828**	**72,457**	**5,491**	**3,219**	**309**	**216**	**308**
1. Community Health Network of Berkshire County	1,099	1,151	93	63	6	4	--[7]
2. Upper Valley Health Web (Franklin County)	486	816	52	57	6	5	6
3. Partnership for Health in Hampshire County (Northampton)	881	1,088	62	25	6	4	6
4. The Community Health Connection (Springfield)	5,489	3,606	288	369	13	8	27
5. Community Health Network of Southern Worcester County	308	1,153	91	79	14	12	--[7]
6. Community Partners for Health (Milford)	903	1,672	142	50	3	3	6
7. Community Health Network of Greater Metro West (Framingham)	934	4,160	323	95	14	10	15
8. Community Wellness Coalition (Worcester)	5,935	3,774	258	217	28	17	16
9. Fitchburg/Gardner Community Health Network	1,550	2,656	185	139	9	7	8
10. Greater Lowell Community Health Network	2,325	3,377	261	169	13	10	10
11. Greater Lawrence Community Health Network	2,506	2,462	196	196	14	9	18
12. Greater Haverhill Community Health Network	633	1,483	98	61	3	3	7
13. Community Health Network North (Beverly/Gloucester)	2,309	1,018	74	16	6	4	--[7]
14. North Shore Community Health Network	1,381	3,396	277	163	15	12	11
15. Greater Woburn/Concord/Littleton Community Health Network	3,033	2,042	150	29	6	4	7
16. North Suburban Health Alliance (Medford/Malden/Melrose)	1,040	3,456	228	59	8	5	10
17. Greater Cambridge/Somerville Community Health Network	3,733	3,587	268	47	7	5	9
18. West Suburban Health Network (Newton/Waltham)	4,079	2,648	202	20	13	9	8
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	20,998	10,247	839	459	50	33	44
20. Blue Hills Community Health Alliance (Greater Quincy)	3,887	4,261	297	64	15	9	15
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	438	1,736	137	171	14	6	10
22. Greater Brockton Community Health Network	1,887	2,787	251	143	11	9	17
23. South Shore Community Partners in Prevention (Plymouth)	678	1,730	119	53	4	2	8
24. Greater Attleboro-Taunton Health & Education Response	1,265	2,658	178	103	8	7	8
25. Partners for a Healthier Community (Fall River)	1,526	1,453	116	116	7	7	9
26. Greater New Bedford Health & Human Services Coalition	1,944	2,149	178	169	10	9	14
27. Cape and Islands Community Health Network	1,577	1,891	128	87	6	3	10

Note that infant deaths are based on a preliminary death file as of December 20, 2013.

1. Births occurring in a geographical place (state, city/town) regardless of the residency of the mother. See Glossary for more details. 2. Births to mothers who report their usual place of residence as a particular geographical place (state, city/town). See Glossary for more details. 3. Less than 2,500 grams (5.5 lbs.). 4. Death of a child whose age is less than one year. 5. Death of a child whose age is less than 28 days. 6. A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more. 7. Due to small numbers (n=1-4), exact count not provided.

Table 52. Mothers[1] Who Used Infertility Treatments, Massachusetts: 2012

	Assisted Reproductive Technology (ART) with or without Artificial Insemination and/or Fertility Drugs[2]		Artificial Insemination with or without Fertility Drugs[3]		Fertility Enhancing Drugs Only[4]	
	N	%[5]	N	%[5]	N	%[5]
State total	1794	64.8%	501	18.1%	475	17.1%
Maternal Demographics						
Race/Hispanic Ethnicity	N	%[6]	N	%[6]	N	%[6]
White non-Hispanic	1405	78.5%	426	85.0%	377	74.5%
Black non-Hispanic	65	3.6%	9	1.8%	16	3.2%
Asian	199	11.1%	36	7.2%	44	8.7%
Hispanic	115	6.4%	27	5.4%	65	12.8%
Other	6	0.3%	--[10]	--[10]	--[10]	--[10]
Birthplace						
US States / D.C./US Terr.	1372	76.5%	427	85.2%	379	79.8%
Non-US-born	422	23.5%	74	14.8%	96	20.2%
Prenatal care funding						
Public	73	4.1%	18	3.6%	42	8.8%
Private, other	1716	95.9%	483	96.4%	433	91.2%
Pregnancy-Related Factors						
Adequacy of Prenatal Care[7]						
Adequate Total[8]	1587	91.9%	396	92.1%	377	93.1%
Adequate Intensive	1069	61.9%	272	63.3%	225	55.6%
Adequate Basic	518	30.0%	124	28.8%	152	37.5%
Intermediate	75	4.3%	19	4.4%	11	2.7%
Inadequate/None	65	3.8%	15	3.5%	17	4.2%
Parity[9]						
1	1128	62.9%	349	69.7%	291	61.3%
2	511	28.5%	130	25.9%	149	31.4%
3+	155	8.6%	22	4.4%	35	7.4%
Age						
20-29	122	6.8%	68	13.6%	114	24.1%
30-34	603	33.6%	200	39.9%	212	44.7%
35-39	700	39.0%	174	34.7%	97	20.5%
40+	369	20.6%	59	11.8%	51	10.8%
Birth Outcomes						
Gestational age						
< 28 weeks (extremely preterm)	28	1.6%	--[10]	--[10]	5	1.1%
< 37 weeks (preterm)[11]	430	24.0%	60	12.0%	61	12.8%
37+	1364	76.0%	441	88.0%	414	87.2%
Plurality						
Singleton	1296	72.2%	448	89.4%	432	90.9%
Multiple birth	498	27.8%	53	10.6%	43	9.1%

NOTE: In 2012, questions about fertility assistance were asked on both the hospital and mother's worksheets, data on this table combines both sources. While asking the mothers has increased reporting, it is known that these treatments are still underreported; as such these numbers should be interpreted with caution. All percentages are calculated based only on mothers with known values for the characteristic(s) of interest, unless otherwise stated. Often women use more than one method of treatment, and the categories presented are mutually exclusive.

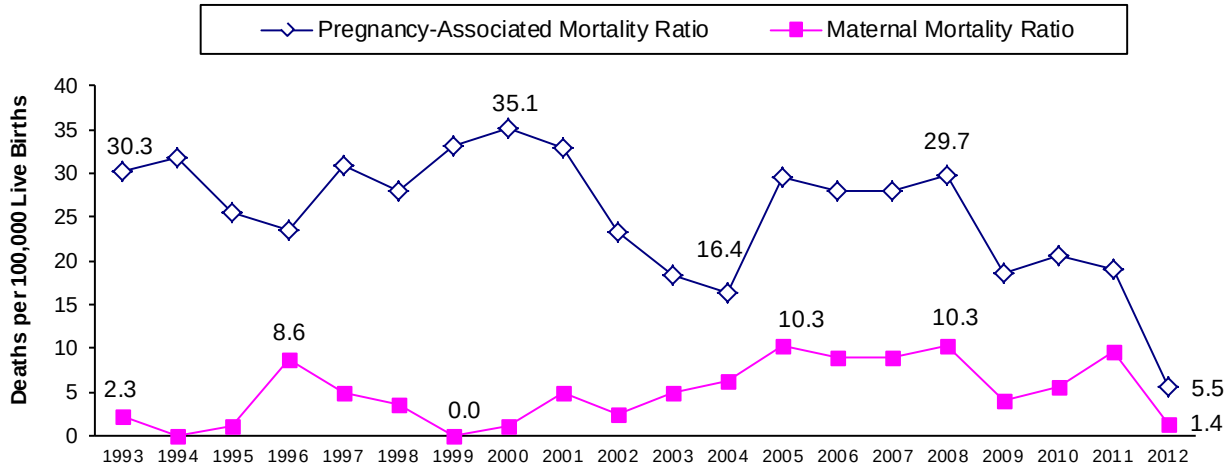
1. The unit of analysis for this table is unique mothers, not births. 2. This category includes all women who used ART (typically IVF) and those who used any additional treatments. 3. This category includes women who used artificial insemination (including intrauterine insemination) and those who used fertility drugs in addition. 4. This category includes women who only used fertility drugs. 5. For state total row, percentages are based on total births where infertility treatment was present. 6. Percent is based on state total of the treatment methods. 7. Based on Adequacy of Prenatal Care Utilization (APNCU) Index. Does not include data from Metro West, Newton Wellesley, Saint Vincent and Winchester hospitals because of reporting problems. 8. Adequate Total = Adequate Basic + Adequate Intensive. 9. Number of live births including the current birth. 10. Numbers and calculations based on 1-4 events are excluded. 11. Categories are not mutually exclusive so percent will add to more than 100%

Table 53. Number of Pregnancy-Associated and Maternal Deaths, Massachusetts: 2001-2012

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Pregnancy Associated Deaths[1]	27	19	15	13	23	22	22	24	14	15	14	18
Maternal Deaths[2]	4	2	4	5	8	7	7	8	3	4	7	7

1. Pregnancy-associated death is defined as the death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause. 2. Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes.

Figure 28. Trends in Pregnancy-Associated and Maternal Mortality, Massachusetts: 1993-2012



NOTE: Ratios shown in graph are per 100,000 live births. Ratios are based on occurrence births, not resident births.

Pregnancy-associated death is defined as the death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause. The pregnancy-associated mortality ratio is the number of pregnancy-associated deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for further information). Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes. Maternal mortality ratio is the number of maternal deaths per 100,000 live occurrence births (see Definition of Rates and Technical Notes in Appendix for more information.)

Table 54. Number of Births by Birth Location, Massachusetts: 2012

Type of Facility for Birth	Number of births
Occurrence Births to Massachusetts residents	
Birthing Centers	239
Dr Offices/Clinics	3
En route	42
Home births	368
Massachusetts Hospitals	70,544
Out of state births to Massachusetts residents	
Hospitals in other states	1,255
Home births	3
Birthing Centers	1
Other and missing	2
All births	**72,457**

Technical Notes

Data Cautions

Limitations of small numbers:
Cells in some tables in this publication, and particularly those tables specific to individual cities and towns, contain small numbers. Rates and proportions based on fewer than five observations are suppressed, and trends based upon small numbers should be interpreted cautiously.

Differences with previously published data
Numbers and rates in this publication may differ from those in previous reports because of updated birth and death files, or release of the most up-to-date population estimates for a given year (see Population Denominators for details on population files).

Self-reported data
Many statistics reported in this publication, such as maternal smoking, education, and race/ethnicity are *self-reported*, and are subject to the usual limitations of this type of information.

Changes in the Collection of Race/Ethnicity Information

The 2003 revision of the Standard Certificate of Live Birth allows the reporting of more than one race (multiple races) for each parent in accordance with the revised standards issued by the Office of Management and Budget (OMB) in 1997.

The revised standards incorporated two major changes designed to reflect the changing racial and ethnic profile of the United States. First, the revision increased from five to twelve the minimum set of categories to be used for identification of race. The twelve categories for race specified in the 1997 standards are: American Indian or Alaska Native, Asian, Back, Guamanian or Chamorro, Hispanic/Latino/Black, Hispanic/Latino/White, Hispanic/Latino/Other, Native Hawaiian, Samoan, White, Other Pacific Islander and Other. The revised standards called for reporting of Asians separately from Native Hawaiians, Samoan or Other Pacific Islanders.

The revised standards require federal data collection programs to allow respondents to select *one or more race categories*. In order to provide uniformity and comparability of the data during the transition period, before multiple-race data are available for all reporting areas, it is necessary to "bridge" the responses of those who reported more than one race to a single-race. The method used to bridge responses for those who report more than one race to a single race is based on a procedure whereby multiple races are assigned to the smallest minority group first (i.e. Asian and White becomes Asian or Black and Native American becomes Native American). All multiple races that include Hispanic will be assigned as Hispanic and this group also includes all respondents who reported Hispanic ethnicities as well.

The revised standards also require federal data collection programs to allow respondents to select *one or more ancestry categories*. The method used to bridge responses for those who report more than one ancestry is based on a procedure whereby multiple ancestries are assigned to each of the ancestries listed.

The following table is from the Parent Worksheet for the birth certificate, which is the self-reported information we use to report on mother's race and ancestry.

2003 revision

Mother/Parent Race

Please indicate your race(s). *You may choose more than one.*

☐ American Indian/Alaska Native (specify tribal nation): _____	☐ Hispanic/Latina/Other (specify):_____
☐ Asian	☐ Native Hawaiian
☐ Black	☐ Samoan
☐ Guamanian or Chamorro	☐ White
☐ Hispanic/Latina/Black	☐ Other Pacific Islander (specify):_____
☐ Hispanic/Latina/White	☐ Other race not listed (specify):_____

Mother/Parent Ethnicity

Please indicate your ethnic background(s). *You may choose more than one.*

☐ African (specify):_____	☐ Japanese
☐ African-American	☐ Korean
☐ American	☐ Laotian
☐ Asian Indian	☐ Mexican, Mexican American, Chicano
☐ Brazilian	☐ Middle Eastern (specify):_____
☐ Cambodian	☐ Native American (specify tribal nation(s)):_____
☐ Cape Verdean	☐ Portuguese
☐ Caribbean Islander (specify): _____	☐ Puerto Rican
☐ Chinese	☐ Russian
☐ Colombian	☐ Salvadoran
☐ Cuban	☐ Vietnamese
☐ Dominican	☐ Other Asian (specify): _____
☐ European (specify): _____	☐ Other Central American (specify): _____
☐ Filipino	☐ Other Pacific Islander (specify): _____
☐ Guatemalan	☐ Other Portuguese (specify): _____
☐ Haitian	☐ Other South American (specify): _____
☐ Honduran	☐ Other ethnicity (ies) not listed (specify): _____

1989 revision

MOTHER'S RACE Please mark the one mark the *one* category that *best describes* the mother's race:

☐ White ☐ Black ☐ Asian/Pacific Islander ☐ American Indian ☐ Other (specify)

MOTHER's ANCESTRY Please mark the *one* category that *best describes* the mother's ancestry of ethnic heritage:

HISPANIC/LATINA

1 ☐ Puerto Rican
2 ☐ Dominican
3 ☐ Mexican
4 ☐ Cuban
5 ☐ Colombian
6 ☐ Salvadoran
7 ☐ Other Central American (specify) _____
8 ☐ Other South American (specify) _____
9 ☐ Other Hispanic/Latina (specify):

ASIAN/PACIFIC ISLANDER

10 ☐ Chinese
11 ☐ Vietnamese
12 ☐ Cambodian
13 ☐ Asian Indian
14 ☐ Korean
15 ☐ Filipino
16 ☐ Japanese
17 ☐ Laotian
18 ☐ Pakistani
19 ☐ Thai
20 ☐ Hawaiian
21 ☐ Other Asian/Pacific Islander(specify) _____

PORTUGUESE SPEAKING

22 ☐ Cape Verdean
23 ☐ Brazilian
24 ☐ Other Portuguese (specify): _____

WEST INDIAN/CARIBBEAN ISLANDER

25 ☐ Haitian
26 ☐ Jamaican
27 ☐ Barbadian
28 ☐ OtherWest Indian/Caribbean Islander (specify):_____

AFRICAN/AFRICAN AMERICAN

29 ☐ African-American/ Afro-American
30 ☐ Nigerian
31 ☐ Other African specify):_____

MIDDLE EASTERN

32 ☐ Lebanese
33 ☐ Iranian
34 ☐ Israeli
35 ☐ Other Middle Eastern (specify):_____

AMERICAN ANCESTRY

36 ☐ Native American/ American Indian (specify tribe/affiliation):_____
37 ☐ American

EUROPEAN and OTHER ancestries

38 ☐ European (specify): _____
39 ☐ Other (specify): _____

Table 55. 2012 Massachusetts Population Estimates by Age Group, Gender, Race and Hispanic Ethnicity (mutually exclusive)

Age Group	Total[1]	White Non-Hispanic	Black Non-Hispanic	Native American Non-Hispanic	Asian Non-Hispanic	Hispanic[2]
Female						
0 to 4	178,458	116,694	16,590	445	13,416	31,313
5 to 9	187,486	127,079	16,546	455	13,410	29,996
10 to 14	195,857	138,086	16,767	494	12,058	28,452
15 to 19	229,111	163,115	19,630	583	14,911	30,872
20 to 24	237,088	164,513	21,067	596	18,825	32,087
25 to 29	234,332	164,892	18,091	541	21,501	29,307
30 to 34	216,089	149,535	17,153	482	20,225	28,694
35 to 39	202,812	142,330	16,176	383	18,393	25,530
40 to 44	234,096	176,708	16,708	530	16,632	23,518
45 to 49	254,484	201,762	16,592	597	13,911	21,622
50+	1,255,958	1,085,440	62,789	2,389	45,018	60,322
All Females	**3,425,771**	**2,630,154**	**238,109**	**7,495**	**208,300**	**341,713**
Male						
0 to 4	187,099	122,474	17,558	476	13,759	32,832
5 to 9	195,279	132,896	17,496	476	13,329	31,082
10 to 14	203,846	144,657	17,287	506	11,808	29,588
15 to 19	233,906	167,057	20,235	630	13,406	32,578
20 to 24	238,846	165,501	21,588	668	17,344	33,745
25 to 29	230,696	163,165	17,491	540	19,243	30,257
30 to 34	210,394	147,330	16,020	440	17,828	28,776
35 to 39	194,644	138,365	14,665	389	17,219	24,006
40 to 44	222,545	169,726	15,225	509	15,338	21,747
45 to 49	243,187	194,396	15,859	605	12,881	19,446
50+	1,059,931	919,573	50,483	2,207	39,365	48,303
All Males	**3,220,373**	**2,465,140**	**223,907**	**7,446**	**191,520**	**332,360**
0 to 4	365,557	239,168	34,148	921	27,175	64,145
5 to 9	382,765	259,975	34,042	931	26,739	61,078
10 to 14	399,703	282,743	34,054	1,000	23,866	58,040
15 to 19	463,017	330,172	39,865	1,213	28,317	63,450
20 to 24	475,934	330,014	42,655	1,264	36,169	65,832
25 to 29	465,028	328,057	35,582	1,081	40,744	59,564
30 to 34	426,483	296,865	33,173	922	38,053	57,470
35 to 39	397,456	280,695	30,841	772	35,612	49,536
40 to 44	456,641	346,434	31,933	1,039	31,970	45,265
45 to 49	497,671	396,158	32,451	1,202	26,792	41,068
50+	2,315,889	2,005,013	113,272	4,596	84,383	108,625
State Total	**6,646,144**	**5,095,294**	**462,016**	**14,941**	**399,820**	**674,073**

1. National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2010-July 1, 2012, by year, county, single-year of age (0, 1, 2, .., 85 years and over), bridged race, Hispanic origin, and sex (Vintage 2012). Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: http://www.cdc.gov/nchs/nvss/bridged_race.htm as of July, 2012, following release by the U.S. Census Bureau of the un-bridged Vintage 2012 postcensal estimates by 5-year age.
2. Persons of Hispanic ethnicity are NOT included in the race categories.
These estimates are used to calculate ***statewide population based rates*** published in this report.

Change in Measurement of Adequacy of Prenatal Care

Change in Adequacy of Prenatal Care Indicator since *Massachusetts Births 2001*:
(This discussion is based on excerpts from "An Overview of the APNCU Index" by Milton Kotelchuck, Sept. 1994, available online at

http://www.mchlibrary.info/databases/HSNRCPDFs/Overview_APCUIndex.pdf. Accessed December 2003).

Beginning with *Massachusetts Births 2001*, adequacy of prenatal care is being measured using a new method. The Adequacy of Prenatal Care Utilization (APNCU) Index, developed by Dr. Milton Kotelchuck, has replaced the Kessner Index, which had been used in the *Advanced Data Births* and *Massachusetts Births* series. The APNCU Index is the standard used in Healthy People 2010 and by the majority of states. It improves upon the Kessner Index in various ways, the most important being the ability to distinguish between inadequate prenatal care due to the timing of initiation and inadequate care due to insufficient prenatal care visits. The APNCU Index also improves upon the Kessner Index by correcting some of its principal faults. First, the APNCU Index more accurately assesses adequacy of visits for term pregnancies; the Kessner Index characterizes 9 or more visits as adequate, due to an early computer database limitation, which only allowed for a single-digit number to record prenatal care visits. Other faults of the Kessner Index include its bias towards measurement of adequacy of initiation of care, and its various computational algorithms due to inadequate initial documentation.

Table 1 of this report provides a comparison of data on adequacy of prenatal care from 1996-2009 as measured by these two separate indices. Below are the definitions for the APNCU Index categories and its two component indices (initiation and received services), and the definition of the Kessner Index categories. Also below is a short summary of the major differences in classification of adequacy of prenatal care using the Kessner Index and the APNCU Index.

The APNCU Index characterizes prenatal care (PNC) utilization by measuring two distinct components of prenatal care -- adequacy of initiation and adequacy of received services (visits). Each of these components is measured as an independent index, and the APNCU Index is a summary of these 2 component indices. As with the Kessner Index, the APNCU Index does not assess quality of the prenatal care that is delivered, only its utilization.

Adequacy of Prenatal Care Utilization (APNCU) Index: Definition of Categories

Category	Month Prenatal Care Began	% of Expected[1] Prenatal Care Visits
Adequate Intensive	1, 2, 3, or 4	110% or more
Adequate Basic	1, 2, 3, or 4	80 – 109%
Intermediate	1, 2, 3, or 4	50 – 79%
Inadequate	Month 5 or later	Less than 50%
Unknown	Prenatal care information not recorded	

[1] The number of "expected" visits is determined based on standards set by the American College of Obstetricians and Gynecologists (ACOG).

Component Indices of the APNCU Index: Definitions of Categories

Component Indices and Summary Index:

The first component index is "Adequacy of Initiation," which describes the adequacy of when prenatal care began during pregnancy. The assumption underlying this scale is that the earlier PNC begins the better. The month or trimester prenatal care begins is widely used as a measure to assess the adequacy of timing of initiation of PNC, since it accurately and succinctly describes when PNC begins. The APNCU Index uses this measure to determine the “adequacy of initiation.”

The second component index, "Adequacy of Received Services” (visits), characterizes the adequacy of received PNC visits during the time period after prenatal care is begun until the delivery. This component attempts to characterize if the woman received the appropriate number of prenatal care visits for the time period in which she received PNC services. [The appropriate number of visits is based on recommendations of the American College of Obstetricians and Gynecologists for an uncomplicated pregnancy. For example, a woman beginning prenatal care during the first month of pregnancy who delivers during the 40th week of gestation (and has no complications with her pregnancy) should receive 14 visits].

The two component indices are measured independently from one another, and can be used as separate indices, since the policy and practice issues underlying whether women are beginning care early and whether they are receiving the recommended amount of visits may be quite distinct. However, because of the popularity and utility of using one overall adequacy of PNC index, the two component indices are combined into a single summary index – the “Adequacy of Prenatal Care Utilization (APNCU) Index.”

Index Categories

Both component indices and the summary index (APNCU Index) characterize PNC as one of five categories: “adequate intensive,” “adequate basic,” “intermediate,” “inadequate,” or “unknown.” The category "adequate basic" refers to the minimum recommended level of care (for a pregnancy with no complications), while "adequate intensive" refers to a level of care exceeding recommended standards. The sum of the "adequate basic" and "adequate intensive" categories is the total adequacy score. In addition, the “inadequate” category can be subdivided to isolate those women who received no PNC. [For definitions of categories, please see the Technical Notes in the Appendix.]

[For more detail on the methodology of the APNCU Index, please call the Bureau of Health Information, Statistics, Research & Evaluation at 617-624-5600].

Adequacy of Initiation Index

Category	Month Prenatal Care Began
Adequate Intensive	1 or 2
Adequate Basic	3 or 4
Intermediate	5 or 6
Inadequate	Month 7 or later, or no PNC
Unknown	Prenatal care initiation information not recorded

Adequacy of Received Services (Visits) Index

Category	% of Expected Prenatal Care Visits
Adequate Intensive	110% or more
Adequate Basic	80 – 109%
Intermediate	50 – 79%
Inadequate	Less than 50%
Unknown	Information on prenatal care visits not recorded

Kessner Index of Adequacy of Prenatal Care: Definition of Categories

Category	Trimester Care Began	Number of Visits
Adequate	1	9 or more
Intermediate	1	5-8
	2	5 or more
Inadequate	1	1-4
	2	1-4
	3	1 or more
No prenatal care	--	0
Unknown	Unknown	Unknown

Summary of Major Differences in Categorization of Adequacy of Prenatal Care between the Kessner Index and the APNCU Index

The two different methods used in the Kessner Index and APNCU Index to calculate adequacy of prenatal care can result in differences in how each one classifies adequacy of prenatal care. These differences only occur under certain conditions, not in all cases (see "Explanation" column).

The Kessner Index classifies prenatal care as…	… but the APNCU Index classifies prenatal care as …	Explanation
Intermediate	Adequate Basic	This is primarily due to the fact that the APNCU Index allows for prenatal care in the 4th month of pregnancy to be considered adequate if the mother received 80-109% of expected visits, whereas the Kessner Index only allows for care begun in the first trimester (months 1-3) to be considered adequate.

Intermediate	Inadequate	This is primarily due to the fact that the APNCU requires that the mother must make at least 50% of the “expected visits for a normal pregnancy”, i.e., 7 visits, which is 50% of the recommended 14 visits for a normal pregnancy, to be “intermediate”, while the Kessner Index allows 5 or 6 visits to meet “intermediate” status if the initiation of PNC is in the second trimester.
Adequate	Intermediate	This is primarily due to the consideration of “expected” visits (based on when the mother initiated care and the length of gestation) using the APNCU Index, which bases expected visits on the ACOG recommendations, which can be as high as 14 visits if a gestational period is 40 weeks, whereas the Kessner Index considers 9 visits sufficient in all cases.
Adequate	Adequate Intensive	The APNCU Index added an "Adequate Intensive" category, which is not used in the Kessner Index. This allows analysis of situations in which more than normal care is received (e.g. women with high-risk conditions, pregnancy complications).

Tests of Statistical Significance

Since the 2005 report, statistics presented in the text section have been tested to determine whether they differ significantly from a target statistic. For example, the number of births in 2010 was compared with the number of births in 2009, to determine whether their difference could have occurred by chance. When a difference is unlikely to have occurred by chance, it is referred to as "significant."

Note that with respect to statistical difference, the language in the reports beginning with 2005 differs from that of past reports, and caution must be used when comparing the text of previous reports with this year's report.

In testing for statistical significance, we have used the testing methods from the National Center for Health Statistics (NCHS). These methods are presented in the following document:

> National Vital Statistics Reports, Volume 52, Number 10
> Births: Final Data for 2002
> by Joyce A. Martin, M.P.H.; Brady E. Hamilton, Ph.D.; Paul D. Sutton, Ph.D.; Stephanie J. Ventura, M.A.; Fay Menacker, Dr. P.H.; and Martha L. Munson, M.S.;
> From the Division of Vital Statistics, NCHS.
> Technical Notes, "Significance testing" section beginning on page 110.

This document is available from the following website:
http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/52/52-23.htm

For comparisons of more than 100 events, whether they are rates, proportions, or numbers, the binomial distribution is assumed, and confidence intervals are examined to see whether they overlap (Refer to the "Confidence Intervals and Infant Mortality Rates" section in this Appendix for an explanation of using confidence intervals to determine statistical significance.) When the number of events is less than 100, a Poisson distribution is assumed, and confidence intervals are constructed based upon the Poisson distribution. For more details and exact formulas for calculating confidence intervals or other tests of statistical significance, refer to the publication listed above.

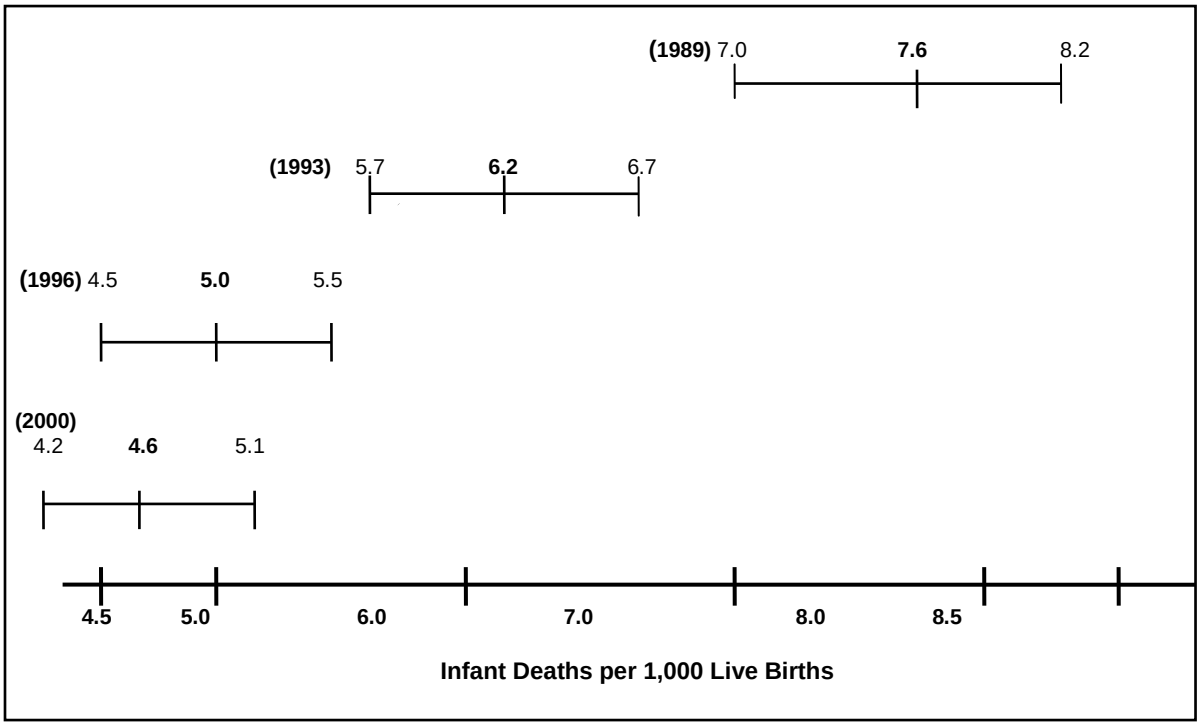
When two statistics are determined to differ significantly, they then are referred to in the text with language expressing differences, such as "higher" and "lower," or "increased" and "decreased". Otherwise, differences that are not significant are reported as having "no change" or "no statistical difference."

Confidence Intervals and Infant Mortality Rates

Beginning with the 1992 Advance Data: Births publication, 95% confidence intervals were added to the calculation of infant mortality rates (IMRs). The confidence interval (CI) provides a measure of stability of the IMR and a basis for comparing rates to determine if they are statistically different. Rates can be compared for the same group in different years or for different groups in the same year. The width of the CI reflects the stability of the IMR. For example, a narrow CI reflects high stability, and a wide interval reflects low stability. If the CIs around two IMRs being compared do not overlap, the difference between the two rates is statistically significant. The following table and chart illustrate the concept of statistically significant differences using actual data from 1989, 1993, 1996, and 2000.

Comparison of Infant Mortality Rates and Confidence Intervals for Selected Years

Year	IMR (per 1,000 births)	95% Confidence Interval
1989	7.6	(7.0-8.2)
1993	6.2	(5.7-6.7)
1996	5.0	(4.5-5.5)
2000	4.6	(4.2-5.1)



The difference between the 1993 IMR and 1996 IMR is statistically significant – the confidence intervals do not overlap. The same is true for the differences between the 1989 IMR and each annual IMR for 1993, 1996, and 2000. However, the difference between the 1996 and 2000 IMRs is not statistically significant, since their confidence intervals overlap.

Table 56. 95% Confidence Intervals for Infant Mortality Rates by Race and Hispanic Ethnicity, Massachusetts: 2000-2012

	Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian	
Year	n	Rate[2] (95% CI)	n	Rate[2] (95% CI)	n	Rate[2] (95% CI)	n	Rate[2] (95% CI)	n	Rate[2] (95% CI)
2000	377	4.6 (4.1, 5.1)	232	3.8 (3.3, 4.3)	74	12.8 (6.8, 20.7)	48	5.2 (1.7, 10.5)	19	4.1 (1.1, 8.9)
2001	407	5.0 (4.5, 5.5)	245	4.1 (3.6, 4.6)	71	12.1 (6.3, 19.8)	69	7.3 (3.0, 13.5)	15	3.1 (0.7, 7.4)
2002	397	4.9 (4.4, 5.4)	239	4.1 (3.6, 4.6)	69	11.6 (5.9, 19.2)	67	7.0 (2.8, 13.1)	16	3.0 (0.6, 7.2)
2003	383	4.8 (4.3, 5.3)	235	4.1 (3.6, 4.6)	75	12.7 (6.7, 20.6)	55	5.6 (2.0, 11.1)	14	2.7 (0.5, 6.7)
2004	376	4.7 (4.2, 5.2)	210	3.8 (3.3, 4.3)	70	11.5 (5.8, 19.0)	75	7.6 (3.2, 13.9)	15	2.7 (0.5, 6.7)
2005	391	5.1 (4.6, 5.6)	230	4.3 (3.7, 4.9)	57	9.4 (4.4, 16.3)	78	7.8 (3.3, 14.2)	18	3.4 (0.8, 7.9)
2006	369	4.8 (4.3, 5.3)	221	4.2 (3.7, 4.8)	72	11.1 (5.6, 18.5)	62	5.8 (2.1, 11.4)	10	1.8 (0.2, 5.2)
2007	380	4.9 (4.4, 5.4)	206	3.9 (3.4, 4.4)	66	10.2 (4.9, 17.4)	81	7.4 (3.1, 13.6)	18	3.1 (0.7, 7.4)
2008	382	5.0 (4.5, 5.5)	194	3.7 (3.2, 4.2)	78	11.7 (6.0, 19.3)	86	7.9 (3.4, 14.3)	16	2.7 (0.5, 6.7)
2009	366	4.9 (4.4, 5.4)	205	5.0 (4.5, 5.5)	54	11.7 (6.0, 19.3)	78	7.9 (3.4, 14.3)	20	2.7 (0.5, 6.7)
2010	319	4.4 (3.9, 4.9)	163	3.4 (2.8, 3.9)	56	8.2 (3.6, 14.7)	65	6.1 (2.3, 11.9)	25	4.3 (1.2, 9.2)
2011	310	4.2 (3.8, 4.7)	159	3.4 (2.9, 4.0)	47	6.7 (2.6, 12.6)	75	5.8 (2.1, 11.4)	22	3.6 (0.9, 8.2)
2012	309	4.3 (3.8, 4.7)	158	3.5 (3.0, 4.0)	57	8.2 (3.6, 14.8)	71	5.4 (1.9, 10.8)	17	2.6 (0.5, 6.6)

1. Deaths of infants of unknown race are excluded except for the total calculation. For rate computations, births of infants of unknown race are allocated into the race categories according to the distribution of births of known race. 2. Rates are expressed per 1,000 live births.

NOTE: This table has been modified from previous reports. For comparisons of more than 100 events, whether they are rates, proportions, or numbers, the binomial distribution is assumed, and confidence intervals are examined to see whether they overlap (Refer to the "Confidence Intervals and Infant Mortality Rates" section in this Appendix for an explanation of using confidence intervals to determine statistical significance.) When the number of events is less than 100, a Poisson distribution is assumed, and confidence intervals are constructed based upon the Poisson distribution.

Definition of Rates and Ratios

Age-Specific Birth Rate

The number of children born to women in a specific age group divided by the population of women in that specific age group, multiplied by 1,000.

$$\text{Age-Specific Birth Rate} = \frac{\text{Number of births to females ages X to Y years}}{\text{Number of females ages X to Y years in the population}} \times 1{,}000$$

Birth Rate

(See Age-Specific Birth Rate, Crude Birth Rate, Fertility Rate, and Teen Birth Rate)

Cesarean Section Rates

$$\text{Total Cesarean Delivery Rate} = \frac{\text{Number of Cesarean births}}{\text{Number of occurrence births}} \times 100$$

$$\text{Primary Cesarean Delivery Rate} = \frac{\text{Number of primary Cesarean births}}{\text{[Number of occurrence births - number of repeat Cesarean births - VBACs - unknown method of delivery]}} \times 100$$

$$\text{Repeat Cesarean Delivery Rate} = \frac{\text{Number of repeat Cesarean births}}{\text{(Number of repeat Cesarean births+number of VBACs)}} \times 100$$

$$\text{VBAC Rate} = \frac{\text{Number of VBACs}}{\text{(Number of repeat Cesarean births+number of VBACs)}} \times 100$$

Crude Birth Rate

$$\text{Crude Birth Rate} = \frac{\text{Number of resident live births}}{\text{Total resident population}} \times 1{,}000$$

Fertility Rate (sometimes referred to as "Birth Rate")

$$\text{Fertility Rate} = \frac{\text{Number of births to females ages 15-44 years}}{\text{Number of females ages 15-44 years in the population}} \times 1{,}000$$

Fetal Mortality Rate

$$\text{Fetal Mortality Rate} = \frac{\text{Number of fetal deaths}}{\text{Number of fetal deaths plus live births in the same year}} \times 1{,}000$$

Feto-Infant Mortality Rate

$$\text{Feto-Infant Mortality Rate} = \frac{\text{Number of fetal deaths + Number of infant deaths}}{\text{Number of fetal deaths + live births in the same year}} \times 1{,}000$$

(Refer to the definitions of Fetal Mortality Rate and Infant Mortality Rate for more details.)

Infant Mortality Rate (IMR)
The death rate among infants less than one year old per 1,000 live births.

$$\text{Infant Mortality Rate} = \frac{\text{Number of resident deaths of infants less than one year old in a year}}{\text{Number of resident live births in the same year}} \times 1{,}000$$

Inter-pregnancy Interval (IPI)
Inter-pregnancy interval is the time, in months, between the date of last menstrual period of current pregnancy and the date of previous live birth. IPI is calculated for each mother currently giving birth to their second or later child.

$$\text{\% Short IPI} = \frac{\text{Number of mothers giving birth to their 2nd or later child with IPI <12 months}}{\text{Number of mothers giving birth to their 2nd or later child in the same year}} \times 100$$

$$\text{\% IPI 12 to 35 months} = \frac{\text{Number of mothers giving birth to their 2nd or later child with IPI between 12 and 35 months}}{\text{Number of mothers giving birth to their 2nd or later child in the same year}} \times 100$$

$$\text{\% IPI 36+ months} = \frac{\text{Number of mothers giving birth to their 2nd or later child with IPI >=36 months}}{\text{Number of mothers giving birth to their 2nd or later child in the same year}} \times 100$$

Maternal Mortality Ratio (MMR)
The number of maternal deaths per 100,000 live occurrence births. The term "ratio" is used instead of "rate" in this report because the numerator (number of deaths) is not a subset of the denominator (live births). The ideal measure would incorporate the total number of pregnancies not just live births in the denominator. However, pregnancies that result in late fetal death or end in induced terminations are difficult to record, and data are often incomplete. As a result, the population at risk of maternal death is generally taken as the number of live births, which is assumed to be a good proxy for the number of pregnancies.

$$\text{Maternal Mortality Ratio (MMR)} = \frac{\text{Number of maternal deaths}}{\text{Number of occurrence live births in the same year}} \times 100{,}000$$

Neonatal Mortality Rate (NMR)
The death rate among infants less than 28 days of age per 1,000 live births.

$$\text{Neonatal Mortality Rate} = \frac{\text{Number of resident deaths of infants less than 28 days of age in a year}}{\text{Number of resident live births in the same year}} \times 1{,}000$$

Perinatal Mortality Rate

$$\text{Perinatal Mortality Rate} = \frac{\text{Number of fetal deaths from 28 weeks gestation plus infant deaths (less than 7 days old)}}{\text{Number of fetal deaths plus live births in the same year}} \times 1{,}000$$

Post Neonatal Mortality Rate
The death rate among infants 28 days of age to less than one year old per 1,000 live births.

$$\text{Post Neonatal Mortality Rate} = \frac{\text{Number of resident deaths of infants 28 days of age to less than one year of age in a year}}{\text{Number of resident live births in the same year}} \times 1{,}000$$

Pregnancy-Associated Mortality Ratio (PAMR)
The number of pregnancy-associated deaths per 100,000 live occurrence births. The term "ratio" is used instead of rate in this report because the numerator includes some maternal deaths that were not related to live-born infants and thus were not included in the denominator.

$$\text{Pregnancy-Associated Mortality Ratio (PAMR)} = \frac{\text{Number of pregnancy-associated deaths}}{\text{Number of occurrence live births in the same year}} \times 100{,}000$$

Teen Birth Rate

$$\text{Teen birth rate} = \frac{\text{Number of births to females ages 15-19 years old}}{\text{Number of females ages 15-19 years old in the population}} \times 1{,}000$$

Total Rate of Change
Total rate of change between two numbers or rates is expressed as a percentage in this report (e.g. The Massachusetts birth rate decreased by 12% from 1990 to 1996.):

$$\frac{Pn-Po}{Po} \times 100$$

where, Pn = rate during later time period
Po = rate during earlier time period

Table A1. Population Estimates[1] for Massachusetts Communities, 2010

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	15,985	Concord	Middlesex	15	17,668
Acton	Middlesex	15	21,924	Conway	Franklin	2	1,897
Acushnet	Bristol	26	10,303	Cummington	Hampshire	3	872
Adams	Berkshire	1	8,485	Dalton	Berkshire	1	6,756
Agawam	Hampden	4	28,438	Danvers	Essex	14	26,493
Alford	Berkshire	1	494	Dartmouth	Bristol	26	34,032
Amesbury	Essex	12	16,283	Dedham	Norfolk	18	24,729
Amherst	Hampshire	3	37,819	Deerfield	Franklin	2	5,125
Andover	Essex	11	33,201	Dennis	Barnstable	27	14,207
Aquinnah (Gay Head)	Dukes	27	311	Dighton	Bristol	24	7,086
Arlington	Middlesex	17	42,844	Douglas	Worcester	6	8,471
Ashburnham	Worcester	9	6,081	Dover	Norfolk	18	5,589
Ashby	Middlesex	9	3,074	Dracut	Middlesex	10	29,457
Ashfield	Franklin	2	1,737	Dudley	Worcester	5	11,390
Ashland	Middlesex	7	16,593	Dunstable	Middlesex	10	3,179
Athol	Worcester	2	11,584	Duxbury	Plymouth	23	15,059
Attleboro	Bristol	24	43,593	East Bridgewater	Plymouth	22	13,794
Auburn	Worcester	8	16,188	East Brookfield	Worcester	5	2,183
Avon	Norfolk	22	4,356	East Longmeadow	Hampden	4	15,720
Ayer	Middlesex	9	7,427	Eastham	Barnstable	27	4,956
Barnstable	Barnstable	27	45,193	Easthampton	Hampshire	3	16,053
Barre	Worcester	9	5,398	Easton	Bristol	22	23,112
Becket	Berkshire	1	1,779	Edgartown	Dukes	27	4,067
Bedford	Middlesex	15	13,320	Egremont	Berkshire	1	1,225
Belchertown	Hampshire	3	14,649	Erving	Franklin	2	1,800
Bellingham	Norfolk	6	16,332	Essex	Essex	13	3,504
Belmont	Middlesex	17	24,729	Everett	Middlesex	16	41,667
Berkley	Bristol	24	6,411	Fairhaven	Bristol	26	15,873
Berlin	Worcester	9	2,866	Fall River	Bristol	25	88,857
Bernardston	Franklin	2	2,129	Falmouth	Barnstable	27	31,531
Beverly	Essex	13	39,502	Fitchburg	Worcester	9	40,318
Billerica	Middlesex	10	40,243	Florida	Berkshire	1	752
Blackstone	Worcester	6	9,026	Foxborough	Norfolk	7	16,865
Blandford	Hampden	4	1,233	Framingham	Middlesex	7	68,318
Bolton	Worcester	9	4,897	Franklin	Norfolk	6	31,635
Boston	Suffolk	19	617,594	Freetown	Bristol	26	8,870
Bourne	Barnstable	27	19,754	Gardner	Worcester	9	20,228
Boxborough	Middlesex	15	4,996	Georgetown	Essex	12	8,183
Boxford	Essex	12	7,965	Gill	Franklin	2	1,500
Boylston	Worcester	8	4,355	Gloucester	Essex	13	28,789
Braintree	Norfolk	20	35,744	Goshen	Hampshire	3	1,054
Brewster	Barnstable	27	9,820	Gosnold	Dukes	27	75
Bridgewater	Plymouth	22	26,563	Grafton	Worcester	8	17,765
Brimfield	Hampden	5	3,609	Granby	Hampshire	3	6,240
Brockton	Plymouth	22	93,810	Granville	Hampden	4	1,566
Brookfield	Worcester	5	3,390	Great Barrington	Berkshire	1	7,104
Brookline	Norfolk	19	58,732	Greenfield	Franklin	2	17,456
Buckland	Franklin	2	1,902	Groton	Middlesex	9	10,646
Burlington	Middlesex	15	24,498	Groveland	Essex	12	6,459
Cambridge	Middlesex	17	105,162	Hadley	Hampshire	3	5,250
Canton	Norfolk	20	21,561	Halifax	Plymouth	23	7,518
Carlisle	Middlesex	15	4,852	Hamilton	Essex	13	7,764
Carver	Plymouth	23	11,509	Hampden	Hampden	4	5,139
Charlemont	Franklin	2	1,266	Hancock	Berkshire	1	717
Charlton	Worcester	5	12,981	Hanover	Plymouth	23	13,879
Chatham	Barnstable	27	6,125	Hanson	Plymouth	23	10,209
Chelmsford	Middlesex	10	33,802	Hardwick	Worcester	9	2,990
Chelsea	Suffolk	19	35,177	Harvard	Worcester	9	6,520
Cheshire	Berkshire	1	3,235	Harwich	Barnstable	27	12,243
Chester	Hampden	21	1,337	Hatfield	Hampshire	3	3,279
Chesterfield	Hampshire	3	1,222	Haverhill	Essex	12	60,879
Chicopee	Hampden	21	55,298	Hawley	Franklin	2	337
Chilmark	Dukes	27	866	Heath	Franklin	2	706
Clarksburg	Berkshire	1	1,702	Hingham	Plymouth	20	22,157
Clinton	Worcester	9	13,606	Hinsdale	Berkshire	1	2,032
Cohasset	Norfolk	20	7,542	Holbrook	Norfolk	22	10,791
Colrain	Franklin	2	1,671	Holden	Worcester	8	17,346

Table A1. (cont'd) Population Estimates[1] for Massachusetts Communities, 2010

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,481	New Marlborough	Berkshire	1	1,509
Holliston	Middlesex	7	13,547	New Salem	Franklin	2	990
Holyoke	Hampden	21	39,880	Newbury	Essex	12	6,666
Hopedale	Worcester	6	5,911	Newburyport	Essex	12	17,416
Hopkinton	Middlesex	7	14,925	Newton	Middlesex	18	85,146
Hubbardston	Worcester	9	4,382	Norfolk	Norfolk	7	11,227
Hudson	Middlesex	7	19,063	North Adams	Berkshire	1	13,708
Hull	Plymouth	20	10,293	North Andover	Essex	11	28,352
Huntington	Hampshire	21	2,180	North Attleboro	Bristol	24	28,712
Ipswich	Essex	13	13,175	North Brookfield	Worcester	5	4,680
Kingston	Plymouth	23	12,629	North Reading	Middlesex	16	14,892
Lakeville	Plymouth	24	10,602	Northampton	Hampshire	3	28,549
Lancaster	Worcester	9	8,055	Northborough	Worcester	7	14,155
Lanesborough	Berkshire	1	3,091	Northbridge	Worcester	6	15,707
Lawrence	Essex	11	76,377	Northfield	Franklin	2	3,032
Lee	Berkshire	1	5,943	Norton	Bristol	24	19,031
Leicester	Worcester	8	10,970	Norwell	Plymouth	20	10,506
Lenox	Berkshire	1	5,025	Norwood	Norfolk	20	28,602
Leominster	Worcester	9	40,759	Oak Bluffs	Dukes	27	4,527
Leverett	Franklin	2	1,851	Oakham	Worcester	9	1,902
Lexington	Middlesex	15	31,394	Orange	Franklin	2	7,839
Leyden	Franklin	2	711	Orleans	Barnstable	27	5,890
Lincoln	Middlesex	15	6,362	Otis	Berkshire	1	1,612
Littleton	Middlesex	15	8,924	Oxford	Worcester	5	13,709
Longmeadow	Hampden	4	15,784	Palmer	Hampden	4	12,140
Lowell	Middlesex	10	106,519	Paxton	Worcester	8	4,806
Ludlow	Hampden	21	21,103	Peabody	Essex	14	51,251
Lunenburg	Worcester	9	10,086	Pelham	Hampshire	3	1,321
Lynn	Essex	14	90,329	Pembroke	Plymouth	23	17,837
Lynnfield	Essex	14	11,596	Pepperell	Middlesex	9	11,497
Malden	Middlesex	16	59,450	Peru	Berkshire	1	847
Manchester	Essex	13	5,136	Petersham	Worcester	2	1,234
Mansfield	Bristol	24	23,184	Phillipston	Worcester	2	1,682
Marblehead	Essex	14	19,808	Pittsfield	Berkshire	1	44,737
Marion	Plymouth	26	4,907	Plainfield	Hampshire	3	648
Marlborough	Middlesex	7	38,499	Plainville	Norfolk	7	8,264
Marshfield	Plymouth	23	25,132	Plymouth	Plymouth	23	56,468
Mashpee	Barnstable	27	14,006	Plympton	Plymouth	23	2,820
Mattapoisett	Plymouth	26	6,045	Princeton	Worcester	9	3,413
Maynard	Middlesex	7	10,106	Provincetown	Barnstable	27	2,942
Medfield	Norfolk	7	12,024	Quincy	Norfolk	20	92,271
Medford	Middlesex	16	56,173	Randolph	Norfolk	20	32,112
Medway	Norfolk	6	12,752	Raynham	Bristol	24	13,383
Melrose	Middlesex	16	26,983	Reading	Middlesex	16	24,747
Mendon	Worcester	6	5,839	Rehoboth	Bristol	24	11,608
Merrimac	Essex	12	6,338	Revere	Suffolk	19	51,755
Methuen	Essex	11	47,255	Richmond	Berkshire	1	1,475
Middleborough	Plymouth	24	23,116	Rochester	Plymouth	26	5,232
Middlefield	Hampshire	3	521	Rockland	Plymouth	23	17,489
Middleton	Essex	11	8,987	Rockport	Essex	13	6,952
Milford	Worcester	6	27,999	Rowe	Franklin	2	393
Millbury	Worcester	8	13,261	Rowley	Essex	12	5,856
Millis	Norfolk	7	7,891	Royalston	Worcester	2	1,258
Millville	Worcester	6	3,190	Russell	Hampden	4	1,775
Milton	Norfolk	20	27,003	Rutland	Worcester	9	7,973
Monroe	Franklin	2	121	Salem	Essex	14	41,340
Monson	Hampden	4	8,560	Salisbury	Essex	12	8,283
Montague	Franklin	2	8,437	Sandisfield	Berkshire	1	915
Monterey	Berkshire	1	961	Sandwich	Barnstable	27	20,675
Montgomery	Hampden	4	838	Saugus	Essex	14	26,628
Mt. Washington	Berkshire	1	167	Savoy	Berkshire	1	692
Nahant	Essex	14	3,410	Scituate	Plymouth	20	18,133
Nantucket	Nantucket	27	10,172	Seekonk	Bristol	24	13,722
Natick	Middlesex	7	33,006	Sharon	Norfolk	20	17,612
Needham	Norfolk	18	28,886	Sheffield	Berkshire	1	3,257
New Ashford	Berkshire	1	228	Shelburne	Franklin	2	1,893
New Bedford	Bristol	26	95,072	Sherborn	Middlesex	7	4,119
New Braintree	Worcester	9	999	Shirley	Middlesex	9	7,211

Table A1. (cont'd) Population Estimates[1] for Massachusetts Communities, 2010

TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	35,608
Shutesbury	Franklin	2	1,771
Somerset	Bristol	25	18,165
Somerville	Middlesex	17	75,754
South Hadley	Hampshire	3	17,514
Southampton	Hampshire	3	5,792
Southborough	Worcester	7	9,767
Southbridge	Worcester	5	16,719
Southwick	Hampden	4	9,502
Spencer	Worcester	5	11,688
Springfield	Hampden	4	153,060
Sterling	Worcester	9	7,808
Stockbridge	Berkshire	1	1,947
Stoneham	Middlesex	16	21,437
Stoughton	Norfolk	22	26,962
Stow	Middlesex	7	6,590
Sturbridge	Worcester	5	9,268
Sudbury	Middlesex	7	17,659
Sunderland	Franklin	2	3,684
Sutton	Worcester	6	8,963
Swampscott	Essex	14	13,787
Swansea	Bristol	25	15,865
Taunton	Bristol	24	55,874
Templeton	Worcester	9	8,013
Tewksbury	Middlesex	10	28,961
Tisbury	Dukes	27	3,949
Tolland	Hampden	4	485
Topsfield	Essex	13	6,085
Townsend	Middlesex	9	8,926
Truro	Barnstable	27	2,003
Tyngsborough	Middlesex	10	11,292
Tyringham	Berkshire	1	327
Upton	Worcester	6	7,542
Uxbridge	Worcester	6	13,457
Wakefield	Middlesex	16	24,932
Wales	Hampden	5	1,838
Walpole	Norfolk	7	24,070
Waltham	Middlesex	18	60,632
Ware	Hampshire	3	9,872
Wareham	Plymouth	26	21,822
Warren	Worcester	5	5,135
Warwick	Franklin	2	780
Washington	Berkshire	1	538
Watertown	Middlesex	17	31,915
Wayland	Middlesex	7	12,994
Webster	Worcester	5	16,767
Wellesley	Norfolk	18	27,982
Wellfleet	Barnstable	27	2,750
Wendell	Franklin	2	848
Wenham	Essex	13	4,875
West Boylston	Worcester	8	7,669
West Bridgewater	Plymouth	22	6,916
West Brookfield	Worcester	5	3,701
West Newbury	Essex	12	4,235
West Springfield	Hampden	4	28,391
West Stockbridge	Berkshire	1	1,306
West Tisbury	Dukes	27	2,740
Westborough	Worcester	7	18,272
Westfield	Hampden	21	41,094
Westford	Middlesex	10	21,951
Westhampton	Hampshire	3	1,607
Westminster	Worcester	9	7,277
Weston	Middlesex	18	11,261
Westport	Bristol	25	15,532
Westwood	Norfolk	18	14,618
Weymouth	Norfolk	20	53,743
Whately	Franklin	2	1,496
Whitman	Plymouth	22	14,489
Wilbraham	Hampden	4	14,219
Williamsburg	Hampshire	3	2,482
Williamstown	Berkshire	1	7,754
Wilmington	Middlesex	15	22,325
Winchendon	Worcester	9	10,300
Winchester	Middlesex	15	21,374
Windsor	Berkshire	1	899
Winthrop	Suffolk	19	17,497
Woburn	Middlesex	15	38,120
Worcester	Worcester	8	181,045
Worthington	Hampshire	3	1,156
Wrentham	Norfolk	7	10,955
Yarmouth	Barnstable	27	23,793

1. MDPH Massachusetts Race Allocated Census 2010 Estimates (MRACE 2010).
These estimates were used for all **community *population based rates*** published in this report.

Table A2. Population Estimates[1] for Massachusetts Community Health Network Areas (CHNAs) and Counties: 2010

CHNA	POPULATION[1]	COUNTY	POPULATION[1]
1. Community Health Network of Berkshire County	131,219	Barnstable	215,888
2. Upper Valley Health Web	87,130	Berkshire	131,219
3. Partnership for Health in Hampshire County	155,900	Bristol	548,285
4. The Community Health Connection	296,850	Dukes	16,535
5. South County Connects	119,539	Essex	743,159
6. Community Partners for Health	166,824	Franklin	71,372
7. Community Health Coalition of Metro	388,909	Hampden	463,490
8 .Common Pathways	309,013	Hampshire	158,080
9. CHN of North Central Massachusetts	262,652	Middlesex	1,503,085
10. The Greater Lowell CHNA	275,404	Nantucket	10,172
11. The Greater Lawrence CHNA	194,172	Norfolk	670,850
12. The Greater Haverhill CHNA	148,563	Plymouth	494,919
13. The North Shore CHN (Beverly/Gloucester Area)	115,782	Suffolk	722,023
14. The North Shore CHN (Salem/Lynn Area)	284,642	Worcester	798,552
15. Northwest Suburban Health Alliance	215,757		
16. North Suburban Health Alliance	270,281	**STATE**	**6,547,629**
17. The Greater Cambridge/Somerville CHNA	280,404		
18. West Suburban Health Network	258,843		
19. Boston Alliance for Community Health	780,755		
20. Blue Hills Community Health Alliance	377,279		
21. CHN of Holyoke, Chicopee, Ludlow, Westfield	160,892		
22. The Greater Brockton CHNA	236,778		
23. South Shore CHN	190,549		
24. The Greater Attleboro-Taunton CHNA	256,322		
25. Partners for Healthier Communities	138,419		
26. Greater New Bedford CHN	202,156		
27. Cape and Islands Health Network	242,595		

1. MDPH Massachusetts Race Allocated Census 2010 Estimates (MRACE 2010).

Glossary

Adequacy of Prenatal Care Utilization (APNCU) Index

The Adequacy of Prenatal Care Utilization Index, developed by Dr. Milton Kotelchuck, is the measure used in this publication to classify the adequacy of prenatal care received by Massachusetts resident mothers. (*Please note:* Prior to the *Births 2001 publication, the Kessner Index was used to measure adequacy of prenatal care; please see definition for Kessner Index below*.) The APNCU Index has five categories (adequate intensive, adequate basic, intermediate, inadequate, and unknown), based on the month of pregnancy in which prenatal care begins and the percent of expected prenatal care visits for the time period during which a woman receives prenatal care services. Please see Technical Notes for more details.

Birthweight

The weight of an infant recorded at the time of delivery. It may be recorded in either pounds/ounces or grams. If recorded in pounds/ounces, it is converted to grams for use in this report.

1 pound = 453.6 grams
1,000 grams = 2 pounds and 3 ounces

Birthweight Categories

Normal birthweight (NBW):	An infant's weight of 2,500 grams (approximately 5.5 pounds) or more recorded at birth.
Low birthweight (LBW):	An infant's weight of less than 2,500 grams (5.5 pounds) recorded at birth.
Very low birthweight (VLBW):	An infant's weight of less than 1,500 grams (3.3 pounds) recorded at birth.

Cesarean Delivery or Cesarean Section (C-Section)

Primary: A mother's first cesarean delivery.
Repeat: A cesarean delivery that has been preceded by at least one Cesarean delivery.

Community Health Network Areas (CHNAs)

The Department of Public Health, in collaboration with health service providers, coalition members, and interested citizens, has designated 27 areas for community health planning. It is the Department's intention to foster in each of these areas the development of Community Health Networks – consortia of health care providers, human service agencies, schools, churches, youth, parents, elders, advocacy groups, and individual consumers – to address the health needs of the community. These community coalitions will participate in monitoring outcomes and progress of strategies and responses to those health needs.

It is hoped the Networks will mobilize around key health issues affecting the community, promote prevention efforts, enhance access to care, provide opportunities for more collaboration among agencies, and create a client-centered, outcome-oriented health service delivery system. Community Health Networks will also promote efficiency in service delivery by working to reduce duplication and overlap, and by identifying gaps in service.

A Community Health Network Area (CHNA) is defined as an aggregation of cities and towns. In the current publication, we have presented some data by CHNA. To determine which cities and towns make up a particular CHNA, Table A1 provides the appropriate CHNA code for each city and town. The data published in this volume reflect the definitions of CHNAs instituted in January 1997 and the corresponding CHNA names.

Confidence Intervals
The confidence interval (CI) for the infant mortality rate (IMR) is a range of values that has a 95% chance of including the underlying risk of an infant death. Observed rates are subject to statistical variation; even if the underlying risk of infant death is identical in two subpopulations, the observed IMRs for the subpopulations may differ because of random variation. The confidence interval describes the precision of observed IMR as an estimate of the underlying risk of infant death, with a wider interval indicating less certainty about this estimate. The width of the interval reflects the size of the subpopulation and the number of infant deaths; smaller subpopulations with fewer infant deaths lead to wider confidence intervals.

Death Cohort Linked File or Linked Birth and Infant Death File – Death Cohort
All infant deaths occurring in a specific year have been linked to their corresponding birth certificates, whether the birth occurred during the same year or in the previous one. This is in contrast to a birth cohort linked file, in which infant deaths may have occurred in the same year or in the year following the year of birth.

Delivery
A delivery may consist of one or more live born or stillborn fetuses. The number of deliveries in a given period will be equal to or less than the number of births because multiple births (twins, triplets or higher–order births) are counted as single deliveries.

EOHHS Regions
The six regions delineated by the Cc~~c~~ommonwealth's Executive Office of Health and Human Services and used by the Department of Public Health for statistical, care coordination and administrative purposes. The regions - Western, Central, Northeast, Metro West, Boston and Southeast - are based on geographical groupings of cities and towns.

Ethnicity
Also known as mother's ancestry. See the section in the Technical Notes of the Appendix entitled: "Changes in the Collection of Race and Ethnicity Information."

Fetal Death
A stillbirth delivered, extracted or expulsed at 20 weeks gestation or more or weighs 350 grams or more.

Feto-Infant Mortality Rate
The combined number of fetal deaths and infant deaths per 1,000 live births and fetal deaths.

Gestational Age (GA)
The developmental period of a fetus from time of conception to time of birth, measured in weeks. There are two main methods for determining gestational age used in this report.

1. Clinical estimate of gestational age. The gestational age is determined by a physical examination and neuromuscular assessment of the newborn. All gestational age statistics in this report are based upon this method, with the exception of the data in Table 14 for Preterm %, which is calculated based upon the last menstrual period.
2. Last Menstrual Period. The gestational age is calculated as the interval between the first day of the mother's last normal menstrual period (LMP) and the infant's date of birth. The National Center for Health Statistics uses this method for determining preterm as is shown in Table 14.

Indicators that are based upon gestational age, such as percent preterm births, vary depending upon with method is used in their calculation. Using the LMP method as the NCHS does, makes the percent preterm births higher (10.7%, 2010); while using the clinical estimate of gestational age

causes a lower value for percent preterm births (8.6%, 2010). The reader must be aware of the method of calculating gestational age when evaluating the preterm percentages.

Some groups of GA used in this report are:

Preterm: infant born with less than 37 weeks of gestation
Late Preterm: infant born between 34th and 36th week of gestation
Term: infant born at 37th week of gestation or later
Early Term: infant born between 37th and 38th week of gestation

Healthy Start
A Massachusetts-funded program providing services and financing for prenatal care to low-income pregnant women who lack health insurance, but do not qualify for Medicaid.

Infant
A child whose age is less than one year (365 days).

Infant Death
Death of a child whose age is less than one year.

Kessner Index (Adequacy of Prenatal Care)
A measure of adequacy of prenatal care, used in *Advance Data: Births* and *Massachusetts Births* publications prior to 2001. The Kessner Index classifies prenatal care as one of 5 categories (adequate, intermediate, inadequate, no prenatal care, and unknown), based on the trimester in which prenatal care began and the number of prenatal visits. The classification adjusts for gestational age to allow for proper classification of premature births, and is as follows:

Category	Trimester Care Began	Number of Visits
Adequate	1	9 or more
Intermediate	1	5-8
	2	5 or more
Inadequate	1	1-4
	2	1-4
	3	1 or more
No prenatal care	--	0
Unknown	Unknown	Unknown

Live Birth
A live birth is any infant who breathes or shows any other evidence of life (such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles) after separation from the mother's uterus, regardless of the duration of gestation.

Low Birthweight (LBW)
See Birthweight Categories.

Maternal Death
The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes.

Mother's Birthplace
In this publication, birth characteristics are presented according to mother's birthplace: those who were born in the 50 states and District of Columbia, or "US States / D.C."; those who were born in Puerto Rico, the US Virgin Islands, and Guam, or "Puerto Rico/US Territories"; and those who were born outside of the US and Puerto Rico/US territories, or "Non-US-born".

Neonate
Infants under 28 days of age.

Neonatal Death
Death of a child whose age is less than 28 days.

Non-US-born Women
See Mother's Birthplace.

Occurrence Birth
A birth occurring in the Commonwealth of Massachusetts, regardless of the residency of the mother. For individual cities/towns, an occurrence birth represents any birth occurring in that city/town, regardless of the residence of the mother. See Resident Birth.

Parity
The total number of live infants ever born to a woman, including the current birth.

Perinatal
Referring to the time period immediately before and after birth (28 weeks of gestation to 7 days after birth).

Perinatal Death
Death to a fetus of 28 weeks gestation or older or a live-born infant less than 7 days old.

Plurality
The number of births to a woman produced in the same gestational period. A singleton is the birth of one infant; twins represent the births of two infants, etc.

Post Neonatal
A child whose age is at least 28 days, but less than one year.

Post Neonatal Death
Death of a child whose age is at least 28 days, but less than one year.

Prenatal Care Source of Payment
Categories used in this publication include:

Public = Government programs including CommonHealth, Healthy Start, Medicaid/MassHealth, and Medicare (may be HMO or managed care), or free care;
Private = Commercial indemnity plan, commercial managed care (HMO, PPO, IPP, IPA, and other), or other private insurance;
Other = Worker's Compensation and other sources;
Self-paid.

Pregnancy-Associated Death
The death of a woman while pregnant or within one year of termination of pregnancy, irrespective of cause.

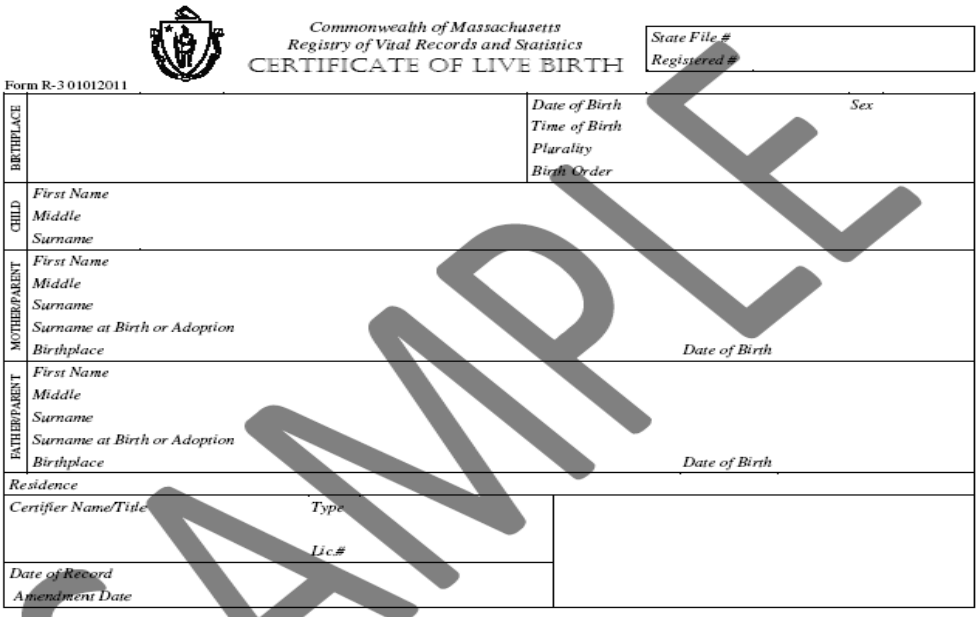
Race
See the section in the Technical Notes in the Appendix entitled: "Changes in the Collection of Race and Ethnicity Information."

Resident Birth
The birth of an infant whose mother reports that her usual place of residence is in Massachusetts. In Massachusetts, a resident is a person with a permanent address in one of the 351 cities or towns. Vital statistics data may be presented in terms either of residence or occurrence. All data in this publication are resident data unless otherwise stated. Resident data include all events that occur to residents of the Commonwealth, wherever they occur. Occurrence data include all events that occur within the state, whether to residents or nonresidents. There is an exchange agreement among the 50 states, District of Columbia,
Puerto Rico, Virgin Islands, Guam, and Canadian provinces that provides for exchange of copies of birth and death records. These records are used for statistical purposes only, and allow each state or province to track the births and deaths of its residents.

Vaginal Birth After Cesarean (VBAC)
A vaginal delivery of an infant to a mother who has had at least one prior cesarean delivery.

Very Low Birthweight (VLBW)
An infant's weight of less than 1,500 grams (3.3 pounds) recorded at birth.

Massachusetts Birth Certificate: 2012



Commonwealth of Massachusetts
Registry of Vital Records and Statistics
CERTIFICATE OF LIVE BIRTH

State File #
Registered #

Form R-3 01012011

BIRTHPLACE		Date of Birth Time of Birth Plurality Birth Order Sex
CHILD	First Name Middle Surname	
MOTHER/PARENT	First Name Middle Surname Surname at Birth or Adoption Birthplace	Date of Birth
FATHER/PARENT	First Name Middle Surname Surname at Birth or Adoption Birthplace	Date of Birth
Residence		
Certifier Name/Title	Type Lic#	
Date of Record Amendment Date		

ACCESS STATUS:
RECORD INFO: MARGINAL NOTES:
OCCURRENCE INFO:
RESIDENCE INFO:

Massachusetts Births 2011 AND 2012 Evaluation Form

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